THE MARINE REVIEW

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See Bright Future for U. S. Ships

Marine Authorities Gain Confidence in America's Strength on the Seas Under Policy Outlined by Head of Shipping Board

CHAIRMAN HURLEY by the terms of his newly announced merchant marine policy has rallied to his support a proportion of American shipping authorities which is surprisingly high. Uncertain in some cases of the personal views of Mr. Hurley, critical in many instances of the business dealing policies of the administration which he represents, and quite generally discouraged by the tribulations through which our weakened merchant marine had passed for years, shipowners and shipbuilders have found his announced policy a pleasant and stimulating surprise. Confidence in the future of the United States on the high seas jumped almost immediately.

Extremists on both sides find little encouragement in the plan. To some our present condition of ships without a shipping policy will be reversed in a few years when we shall have a shipping policy without ships. To those favoring government ownership—generally politicians and not shipbuilders and operators—the vigorous advocacy by Mr. Hurley of the government retiring from the shipbuilding and shipping business is a severe blow. The majority of American marine experts, however, find in the Hurley suggestions, a tangible basis for permanent growth.

Private Ownership as First Essential

Mr. Hurley places at the top of the list the question of private ownership. He cuts through the barriers raised by advocates of government ownership and uncovers the real, essential factor which will determine America's marine future. This factor is the development of an increasing number of American firms and individuals interested in shipping. The country's concentration on the development of its internal resources furnishes the answer to our years of shipping weakness. The war has given the country a broader viewpoint, has opened new trades and has developed a manufacturing capacity now in need of export trade. These new conditions promise a revival of American interest in shipping and Mr. Hurley wisely decided that this interest could best be fostered by private initiative.

The approval given the Hurley proposals ranges from the almost unanimous verdict in favor of private ownership to a bare majority supporting the plan for government directors. The proposal to sell the ships at a price reflecting the world market, is strongly indorsed while the terms of deferred payment are similarly approved. His plan to eliminate foreign insurance companies is generally sanctioned on the assumption that American firms can develop more quickly. The provision for federal control of a transfer of registry is generally supported, a condition true also of the suggestion for federal incorporation. The relative disfavor which meets his plan for government directors reflects largely the doubt felt over the government's ability to find sufficient men of experience to qualify for these posts. The method suggested for raising the merchant marine development fund is new and Mr. Hurley is given credit freely for having developed an ingenious plan. This fund, if it operates along the lines Mr. Hurley predicts, will answer many of the arguments of advocates of ship subsidies as well as those upholding government ownership as the one method of developing new trade routes.

What to Do With the Hurley Plan

The United States now has for the first time in years a merchant marine policy widely approved and officially supported. The President's general support can be assumed from Mr. Hurley's freedom in advocating his program. The test of national sentiment carried out by THE MARINE REVIEW and presented on the following pages, shows the approving attitude of those interested in shipping. The test reflects at the same time the great increase in confidence held in our marine future. Provided now with a definite target, the growing number of advocates of an American merchant marine should actively urge all necessary improvement to the plan and secure its early adoption by congress.

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Hurley's New Marine Policy

An Analysis of its Main Points

What the Nation Thinks of It

(*Percentages below are explained in detail on page 220*)

I—Private Ownership

Through his advocacy of private ownership of the American merchant marine, Mr. Hurley has rallied to his support practically every shipowner, shipbuilder and student of marine affairs. The voting campaign carried on by The Marine Review, as described on page 220, shows that practically 100 per cent of the shipowners and shipbuilders of the country favor private ownership. The few defending government operation point generally to the need for using the large government fleet, created with taxpayers' money, for national purposes such as the operation of the ships in unprofitable trades which ultimately may become of great value to the nation. Against this argument is the fact, as clearly pointed out by Mr. Hurley, that "the successful development of a merchant marine depends not so much on ships, or money, or government aid, as it does on the existence of a large class of alert, resourceful and energetic men engaged in the shipping business. It is clear that the number of such men can be greatly increased only under conditions of private initiative."

The position taken by Mr. Hurley on this question has surprised many of the shipping men and has delighted all but a few. The unanimous approval given to this position has inclined the shipping world to look with greater toleration on the other proposals which Mr. Hurley feels necessary adequately to protect the public interest.

In favor of, 97.5 per cent; opposed, 2.5 per cent.

II—Sale of Ships at World Market

With the exception of the extremists who advocate government ownership—and these generally are men not connected with ship operation or ship construction, and who are free from the necessity of earning returns on their capital, satisfying stockholders, or paying wages—this proposal is actively supported. The original cost of a ship is the largest single factor in determining the ability of her owner to compete successfully, a fact which is becoming more widely appreciated and which John H. Rosseter, director of operations of the shipping board, pointed out in an address published in the April issue of The Marine Review. A difference of several hundred thousand dollars in the cost of construction imposes a charge against the vessel that handicaps its revenue earning ability every day of its life. An increasing number of American shipowners who hesitate to predict success for American ships under the normal burden of higher constructing and operating costs, are inclined to grow optimistic as they discuss the possibility of competing successfully with shipowners of other nations, provided they can start the race with an equality in ship costs.

The defense for Mr. Hurley's proposal is readily understood. Ship construction by all of the nations allied in the war against Germany, was a military necessity. The present condition of unrest and disturbance in Europe, brought about by food shortage resulting from the inability to keep the world properly provisioned during the war, is a spur to any lagging memory of the military character of the emergency fleet construction. Mr. Hurley recognizes this fact and desires to recover a fair sum on the high war cost of the ships, to place American shipowners on a parity with those of other nations, and to protect American shipyards who would be crippled if the vessels were disposed of at a value below the market. The Hurley plan may in a general way, return to the government $2,000,000,000 as the selling price of a fleet which cost $3,000,000,000. The recovery of two-thirds of the cost would represent probably the highest rate of salvage on any of the expenses incurred during the war.

In favor of, 96.4 per cent; opposed, 3.6 per cent.

III—Payment Over 10-Year Period

"Liberal" is the adjective most frequently applied in describing the terms of sale proposed under the Hurley plan. These terms call for a down payment of 25 per cent of the price of the vessel, followed by 10 per cent in the second year, 9 per cent in the third year and 8 per cent in each of the next seven years. This schedule thus provides for the payment of 60 per cent of the purchase price in the first five years and 40 per cent during the last five. Mr. Hurley lays great stress on this plan of payment, as he sees in it a method to keep out of the field any purchaser who desires to reap a large temporary profit.

In general, this plan would call for the initial payment of about $500,000,000 for the government's vessels, a sum which several financiers interested in shipping, have stated can be raised without much difficulty. One or two suggestions have been received by The Marine Review favoring a cash payment for the vessels, but the majority of the shipowners favor a policy of paying for the vessels in from 10 to 20 years.

In favor of, 85 per cent; opposed, 15 per cent.

IV—Insurance

Under the Hurley proposal, marine insurance would be restricted entirely to American control. The purchaser of a vessel would be required to insure with an American firm his equity in the vessel, the government carrying in its own fund, as at present, but for purchaser's account, hull and machinery insurance covering that part of the vessel for which payment has not been made. This measure, according to Mr. Hurley, is necessary as he does not believe American companies have sufficient financial strength at the

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present time to insure the entire fleet. The proportion of government insurance would decrease as the purchaser's equity mounted until at the end of 10 years, all of the ships would be insured by private American insurance companies.

The proposal is quite frankly an attempt to remove from the American market the English companies which long dominated it, but whose relative strength has been seriously weakened by the great growth of American companies in the past few years. This proposal if put into effect would undoubtedly be found to be satisfactory to American shipowners.

In favor of American firms, 95.8 per cent; opposed, 4.2 per cent.

In favor of government insurance, 81.4 per cent; opposed, 18.6 per cent.

V—Transfer to Foreign Registry

The express permission of the government would be required before any vessel could be transferred to foreign registry, if Mr. Hurley's plan wins its way through congress. Upon the wisdom of this proposal, a wider divergence of opinion is held. This ranges from a whole-hearted approval of Mr. Hurley's stand, to a position favoring a free transfer of ships without waiting for government sanction. The advocates reflect a belief that during the period when our merchant marine policy is being formulated, and our merchant marine developed, some check should be retained on the possibility of these vessels going to another flag.

In favor of, 70 per cent; opposed, 30 per cent.

VI—Federal Incorporation

Mr. Hurley lays great emphasis on the necessity of protecting the public interest. He aims to accomplish this by federal incorporation of all companies purchasing vessels. No stock is to be issued in excess of the money value actually paid in on vessel property, and no stock is to be issued or transferred to an alien. The head of the shipping board sees in this proposal a satisfactory method of avoiding watered stock, profiteering and stock jobbing.

The shipping fraternity of the country unites with Mr. Hurley in his desire for a successful check on any such practices. To many, however, federal incorporation has a different interpretation, similar to that which has led to agitation for such a measure for some years. The necessity in foreign trade of dealing with the nationals of many foreign countries gives rise frequently to a confusing condition as foreigners, ignorant of even the names of American states, consider the present form of state charters more or less valueless. The restriction placed on the permissible capital is given by some as a drawback, but in general this proposal is quite actively supported.

In favor of, 65.6 per cent; opposed, 34.4 per cent.

VII—Government Directors

The nation's sentiment on this heading, as evidenced by the table shown on page 220, is slightly favorable to the acceptance of the Hurley proposal. The plan calls for one member of the board of directors of each company purchasing a vessel, to be named by the government. This director should draw no salary either from the steamship corporation, or from the government, receiving only the customary director's fee for each meeting he attends. In general, the sentiment reflects a belief that the proposal is relatively unimportant and that it is one which might cause some harm and probably would result in little good.

To many of those in the marine field, the difficulties in the way of securing competent directors, under the restrictions outlined, seem insurmountable.

On the other hand, the large equity which the government will retain in the vessels in the early years has led a majority to feel that federal representation on the board of directors is justified.

In favor of, 52.5 per cent; opposed, 47.5 per cent.

VIII—Permanent Committee of Directors

The sentiment on this proposal follows closely that on No. VII. If government directors are to be provided, there is little tendency to question the benefit of having them study regularly the broad, general problem of the American merchant marine, and through such an organization to establish a continuous method of interchanging views between the ship operating companies and the shipping board. The burden imposed by the periodic meetings at Washington, has given rise, however, to some skepticism over the ability of the government to find directors of ability who can give their time to any such plan.

In favor of, 57.4 per cent; opposed, 42.6 per cent.

IX—Merchant Marine Development Fund

By this suggestion, Mr. Hurley is quite freely given credit for having devised an ingenious method of meeting a difficult problem. This fund is to be secured by setting aside the difference between the customary commercial charges for interest and insurance, and the rate which the government is enabled to charge.

This proposal provides relief in a form not previously suggested, and while not meeting the situation in the manner which advocates of ship subsidies favor, it has the advantage of not being open to the objections which opponents of such subsidies raise. It gives an answer to those advocates of government ownership who desire to see the government develop certain trade routes, offering a method of doing this without drawing upon the public treasury. In the same way the money is not taken from the steamship business as the operators are not charged more than current market rates for similar service, whether the service rendered is insurance or credit.

The proposal has been welcomed as a really valuable suggestion for solving the troublesome problem of high operating costs on American ships.

In favor of, 74.6 per cent; opposed, 25.4 per cent.

X—Vessel Mortgages

While not a direct part of the complete plan suggested by Mr. Hurley, the provision to alter the present status of vessel mortgages is considered by him as one of great importance. The adoption of his suggestions along this line would call for the third new statute to be enacted by congress, the two others being that providing for federal incorporation and for the continuance of the government in the insurance field.

This proposal is quite widely favored and is generally considered as one to which Mr. Hurley has given considerable thought.

In favor of, 83.9 per cent; opposed, 16.1 per cent.

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Hurley Plan Meets With Approval

Vote of Shipowners and Shipbuilders Shows That Majority Favor His Plan—Proposal for Federal Directors Approved by Narrow Margin

IMMEDIATELY after Chairman Hurley of the United States shipping board outlined his plan for the disposal of the government-owned merchant vessels, built as a war measure, THE MARINE REVIEW formulated a simple and effectual method for ascertaining just how those vitally interested in maritime affairs regarded the 10 provisions of the plan as outlined.

Ballots, a facsimile of which is shown on the facing page, were prepared and sent to shipowners and shipbuilders. The prompt and generous response was an index to the keen interest taken in the future of America's merchant marine. The voting enables THE MARINE REVIEW to publish authentic information on public opinion regarding this important question.

As shown by the ballot reproduced, a space was provided for suggesting changes to the different proposals. This feature of the ballot was made use of by a large majority of the firms. Some of these suggestions appear on the facing page.

Taken as a whole, public opinion is with Mr. Hurley. In fact, his suggestions have met with a general approval that is surprising. The weight of opinion is against government control in any form. The summary of the vote given below reveals this sentiment. It shows that 100 per cent of the shipowners are in favor of private ownership while 95.6 per cent of the shipbuilders voted in the affirmative on this question and only 4.4 per cent voted against private ownership. The total of both classes, that is shipowners and shipbuilders, shows that 97.5 per cent are in favor of private ownership.

On the question of sale price, 100 per cent of the shipowners favor the world market price as do 93.4 per cent of the shipbuilders.

Eighty per cent of the shipowners voted in favor of the 10-year payment plan and 98.9 per cent of the shipbuilders also indorsed this proposal.

On the insurance question, 100 per cent of the shipowners voted in favor of American firms carrying part of the insurance while 92.9 per cent of the shipbuilders also voted favorably.

On the second clause in this question, 84 per cent of the shipowners voted favorably as did 78.9 per cent of the shipbuilders.

On the question of transfer to foreign registry, 66.7 per cent of the shipowners voted in favor of government permission being necessary, while 73 per cent of the shipbuilders approved.

On the federal charter question, 63 per cent of the shipowners favor it while 37 per cent voted against it. The vote of the shipbuilders was 68 per cent favorable, 32 per cent against.

The question of a government director secured a bare majority, as only 55 per cent of the shipowners are in favor of this and only 50.8 per cent of the shipbuilders.

On the question of directors forming a permanent advisory committee, 58 per cent of the shipowners voted favorably as also did 56.7 per cent of the shipbuilders.

On the question of the merchant marine development fund, 68 per cent of the shipowners voted favorably as

Hurley Favors Vote

St. Augustine, Fla.

Editor, THE MARINE REVIEW—

I AM very much pleased that you have issued a ballot on the merchant marine plan suggested by me, for the readers of THE MARINE REVIEW. *This will obtain an expression from the practical shipbuilders and shipowners in the country that will be helpful to all of us. We are all anxious to accomplish the best results possible for the country and any campaign such as the one you are pursuing, cannot help but be beneficial to all concerned.*

(*Signed*) EDWARD N. HURLEY.

Summary of Vote Taken on the Hurley Merchant Marine Plan

Expressed in Per Cent

	Shipowners		Shipbuilders		Total	
	Yes	No	Yes	No	Yes	No
1—Ownership—private	100	0	95.6	4.4	97.5	2.5
2—Sale price of ships—world market	100	0	93.4	6.6	96.4	3.6
3—Payment—10-year period	80	20	98.9	1.1	85.0	15.0
4—Insurance—						
Part American firms	100	0	92.9	7.1	95.8	4.2
Part government	84	16	78.9	21.1	81.4	18.6
5—Transfer to foreign registry—government permission required	66.7	33.3	73.0	27.0	70.0	30.0
6—Charter—federal	63	37	68.0	32.0	65.6	34.4
7—Director—one government	55	45	50.8	49.2	52.5	47.5
8—Directors to form permanent advisory committee	58	42	56.7	43.3	57.4	42.6
9—Merchant marine development fund (derived from interest and premium payments—to meet interest charges on unprofitable trade routes engaged in at government request)	68	32	78.6	21.4	74.6	25.4
10—Vessel mortgages—to be made superior liens	88.6	11.4	81.3	18.7	83.9	16.1

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did 78.6 per cent of the shipbuilders.

On the question of vessel mortgages to be made superior liens 88.6 per cent of the shipowners voted favorably as did 81.3 per cent of the shipbuilders.

Ballot on Hurley Merchant Marine Plan

for

THE MARINE REVIEW

YOUR VOTE is needed to give representative composite information on what the leading marine companies want. YOUR VOTE will be of real value in furnishing definite guidance to congress when legislating a few weeks from now on the American merchant marine policy.

We offer you this opportunity of voting on a definite merchant marine policy.
Kindly check each item to indicate your approval or disapproval.
Your name will NOT be published as only the total vote on each item is desired.
A stamped envelope is enclosed for reply.
An immediate answer is necessary to make this plan of testing American sentiment of maximum value.

Do you favor— Proposal No.	Yes	No
1—Ownership—private	X	
2—Sale price of ships—world market	X	
3—Payment—10-year period		X
4—Insurance— Part American firms	X	
Part government		X
5—Transfer to foreign registry —government permission required		X
6—Charter—federal	X	
7—Director—one government		X
8—Directors to form permanent advisory committee		X
9—Merchant marine development fund (derived from interest and premium payments—to meet interest charges on unprofitable trade routes engaged in at government request)		X
10—Vessel mortgages—to be made superior liens		X

We suggest these changes—
Proposal No.

1—Let government sell ships, pass reasonable navigation laws and leave the merchant marine alone.
2—
3—Fifteen years
4—American and foreign
5—✓
6—✓
7—✓
8—✓
9—Interest on mortgages 4 per cent.
10—No changes in present laws—they are satisfactory.

REPRODUCTION OF FIRST BALLOT RETURNED

What Shipowners and Shipbuilders Think of the Hurley Plan

WIDE interest taken in THE MARINE REVIEW's ballot on the Hurley merchant marine plan is evidenced not only by the number of ballots returned but by the individual opinions expressed on the ballots in the numbered spaces devoted to this purpose. These opinions point out graphically just what individuals, vitally interested in the merchant marine question, wish to see accomplished. Some of these personal opinions, taken from the ballots, follow:

Merchant marine development fund should be liberal to the shipowner.

Admiralty lien on vessel mortgages should be continued.

Free trading of vessels should be permitted.

Insurance should be in the open market.

Steamers should not be sold to large corporations engaged in merchandising as this procedure would create monopolies.

Removal of all government restrictions on vessel building and operation should be made.

Believe in no government ownership, management or control.

Advocate lower wages or a subsidy to offset foreign competition.

The sooner vessels are returned to private ownership, the better.

Directors of advisory committee should be men of the highest standard.

Insurance should be divided to proportion the risk.

Transfer to foreign registry should be optional with the owner—if he finds it impossible to operate under our laws and obstacles, transfer to a flag encouraging shipping should be allowed.

Payment for vessels should be divided into equal amounts for a period of 20 years with bond against lien.

Least possible amount of government restriction should be involved in charters.

Suggest $125 per deadweight ton as a fair sale price.

All vessel insurance should be carried by the government if possible. Trade secrets must not be made public.

Merchant marine development fund is poor policy as it opens the way to graft.

All vessel insurance should be carried by private companies.

No vessels should be used on lines that do not pay operating expenses.

Ten-year payment plan seems to be the most feasible that could be devised.

Vessels should be sold for cash.

Charter rates should be governed by the law of supply and demand.

All ships should be operated and directed by private owners.

Advisory committee should be composed of shipping men.

Unless the limits of the functions of the proposed government directors are clearly defined and their powers restricted to a minimum, it might otherwise lead to abuses or favoritism, or unnecessarily hamper business with red tape.

Any connections with the government must be free of political control.

Transfer to foreign registry should be through the enactment of a law and not by special government permission.

Believe American shipowners engaged in foreign trade should be permitted to hire foreign crews to compete with foreign business.

Keep our merchant marine at all costs—anything that will keep our flag on the seas is advocated.

Private ownership should be under government control.

Politics should be eliminated. Politics make government ownership unprofitable and disastrous in every way.

The United States shipping board should be dissolved and the LaFollette act repealed. Let shipowners operate without restrictions other than maritime laws.

Time of payment of vessels should depend on the trade routes in which they are engaged.

Government-owned vessels should be sold only to American citizens.

Pass laws so we can sail our ships as do other nations. The federal government has legislated against the shipping interests for the past 50 years.

A business policy carried out by capable and experienced business men is favored.

Present laws relative to liens are satisfactory and they should not be changed.

Make American registry as attractive as foreign.

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Many Problems Confront Shipyards

Five Causes of the High Cost of Ship Construction in American Yards Are Pointed Out—Proposed Solution

By Holden A. Evans
President, The Baltimore Dry Docks & Ship Building Co.

THE shipbuilding industry of this country is in a peculiar—yes, remarkable condition. Before the war we had little oversea merchant shipbuilding. The war brought urgent demand for merchant ships. Large plants were built, both by the government and private enterprise, and thousands of unskilled men were employed in these plants.

Today this country has greater shipbuilding facilities than any other country. These facilities are largely manned by untrained and half-trained men.

The problem before the shipbuilders is—what is to be done with these great plants and the army of workmen employed therein? This must be answered by the government and the people of this country.

At present all of these plants are engaged on government work. The government has canceled many contracts and suspended others. The shipbuilder is forbidden to take foreign contracts. The American shipowner will not place any orders.

If these shipbuilding plants are to continue in operation, they must be given work by governmental agencies.

Before the war cargo ships were built in Great Britain at from $30 to $40 per deadweight ton. At the same time, some cargo ships of similar type were built in this country at from $60 to $70 per deadweight ton. But, mark you, the American shipbuilder made no money at these prices. The American shipyards were either bankrupt or on the verge of bankruptcy.

Today contracts are being placed in Great Britain at $100 to $120 per deadweight ton. In this country, under present conditions, it will cost the shipbuilder from $170 to $180 a ton to build the same ship. This is not a pleasant prospect either for the shipbuilder or the country.

The high cost of construction in this country is due to the following:

1. *High cost of wages.* The wages today are double what they were before the war. The wage schedule which was fixed by orders of the government is approximately double the rates paid in Great Britain.
2. *The high cost of material.* Before the war steel plates could be bought at $1.10, while lately they were $3.25—approximately three times as much as before the war. All other material costs have greatly increased.
3. *The inefficiency of a large number of unskilled men taken in the yards,* due to the enormous plant expansion.
4. *Inefficiency due to rush war methods.* On account of the urgent military need of ships, speed of construction was the only thought. This brought about extravagant methods. One of the results of these rush methods is that the old trained men are not as efficient today as they were before the war. It will take some time to bring them back to normal efficient methods.
5. *The inefficiency due to the rapid increase in wages.* The men do not work as steadily as before the war. There is much more lost time.

This statement of facts will not be disputed by any experienced shipyard manager. What, then, is to be done to continue shipbuilding in this country?

You will be told by some that the American workman is the most efficient in the world and that this is the answer. The American workman in some trades is the most efficient, but this is not true at the present time in shipbuilding.

Ask Homer Ferguson, of Newport News; Joe Powell, of Bethlehem; Harry Mull, of Cramps; Joe Tynan, of the Union Iron Works, or any other experienced shipbuilder. They will tell you that shipbuilding is a trade difficult to master. They will tell you that the majority of their skilled men gained their skill and experience in shipyards abroad, and, furthermore, that the shipyards today are filled with men who are just beginning to learn.

What, then, is the real answer? It is probable that wages abroad will rise, and that the difference between our wages and theirs will not be so great as it is at present. The cost of material will surely fall and it seems as if in the near future our material for shipbuilding will be as low as it is abroad. The real answer is—*remove the various inefficiencies that exist at present and educate and train the workmen.*

You can't expect us to learn shipbuilding in the few months in which we have been engaged in the work on a large scale. You can't expect us to compete with managers and workmen who have had years of experience, while we have only had our first lesson.

It is probable that in the operation of ships on a large scale similar conditions will be found. American operators must be given time to learn before they can be expected to compete with those who have had years' and years' experience.

We in the shipyards must have work to do, that is—ships no build—and we must have time in which to educate our staff, our foremen and our workmen if you expect us to compete with the world.

If we are to maintain a great American-built, American-operated merchant marine, the American people must in some way or another pay for the excess cost while we are learning to build and learning to operate. In no other way will we ever get it.

We have plants and machinery superior to the equipment abroad; we have aggressive and efficient shipyard managers; we have ingenious and intelligent workmen.

To carry on shipbuilding, give the shipyards and the American workmen in those shipyards a chance, a fair trial. Give the well-equipped plants ships to build, allowing a fair margin of profit. Let our managers and workmen have an opportunity to learn and progress. If you will do this, the extra cost will be well expended—I promise you that—the shipbuilding industry will nobly respond, and in a few years the United States will be the greatest and most efficient shipbuilding country of the world.

Business Men Approve

By Otto Kahn
Kuhn, Loeb & Co.

AN item which enters into our export trade is our shipping policy. It is a vital thing that a far larger portion of our trade than heretofore be carried in our own bottoms, that we establish shipping lines, that we do not depend upon the good-will and the consideration and the disinterestedness and the unselfishness of other nations. Mr. Hurley, recently, put forward a carefully framed and carefully thought out program to deal with that question. I am frank to say that I have not sufficiently digested it—it is a complicated and difficult thing and a good deal can be said on both sides—to express an opinion about it, except to say that in a general way it seems to follow lines of which the business community will cordially approve.

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Hurley's Merchant Marine Policy

That the ships should be sold to and operated by American citizens under no restrictions other than the terms of the bill of sale and the fixation of maximum freight rates, either as provided in Section 18 of the act approved Sept. 7, 1916, or as may be agreed by the government and the operator in specific instances.

The ships should be sold at a price which fairly reflects the current world market for similar tonnage.

Twenty-five per cent of the purchase price of each ship should be paid down, the remainder falling due and payable in graded annual installments over a period not exceeding 10 years. The government should take and hold a mortgage for the unpaid balance, charging interest thereon at the customary commercial rate of 5 per cent. One-fifth of this interest, representing the difference between the customary government interest of 4 per cent and the customary commercial rate, should be paid into a merchant marine development fund to be described hereafter.

The purchaser should be required to agree to insure and keep insured with an American marine insurance company, his equity in the vessel, and because the American marine insurance market has not at present sufficient resources to underwrite all the vessels the government has to sell, the government should carry in its own fund, as at present, but for purchaser's account, hull and machinery insurance covering that part of the vessel for which payment has not been made. Our experience in operation shows that the government can carry this insurance for at least 1 per cent less than the open market rate. However, it is proposed that the open market rate be charged, and that the difference be paid into the merchant marine development fund.

It is understood that no transfer of a vessel to foreign registry should be permitted without express permission of the government.

Each purchaser who wishes to operate in the foreign trade should be obliged to incorporate under federal charter, the necessary legislation for which should be passed by congress without delay. Such a charter should provide that no stock shall be issued in excess of the money value actually paid in on vessel property, and that no stock can be issued or transferred to an alien.

It should also provide that one member of the board of directors for each company shall be named by the government. This director should draw no salary, either from the steamship corporation or from the government. He should receive only the customary director's fee for each meeting he attends.

The same legislation should provide for periodical meetings of these government-named directors, in the city of Washington, where they will constitute an official body which will confer with and advise the shipping board, or other designated government agency, upon problems arising in, or questions affecting the welfare of, the American merchant marine, including the administration of the Merchant Marine Development Fund.

This fund, drawn from the sources previously indicated, should be used to relieve such financial difficulties as may be encountered in the development of an adequate and well-balanced American merchant marine. For instance:

It is foreseen that a number of trade routes important to the immediate or future welfare of American commerce must be established and developed. Some of these routes may not yield steamship operating profits until their existence shall have attracted an increased volume or better balance of trade. Revenue derived from the carriage of mail, and possible fees for the training of seamen and cadet-officers, may partly compensate losses incurred on these routes. Still, in cases where the government sells a ship upon condition that it be operated in a route which may not prove profitable at once, it will be necessary to provide for the payment of defaulted interest from the Merchant Marine Development Fund, in the discretion of the shipping board or other government agency, upon recommendation of the board of government directors, until such time as the route may begin to yield profit. When the ships in the route earn their annual interest rate and a profit, one-half the profit earned each year should be paid into the Merchant Marine Development Fund until all moneys drawn from the fund on account of the vessel in question shall have been replaced. The other half should go annually to the steamship stockholders.

Such vessels cruising in routes which fail to prove susceptible of profitable development and which do not serve any purpose of the government of the United States, may be transferred by the government to other routes. However, should the government become convinced that any vessel has failed to make expenses solely or chiefly because of incapable management, it may foreclose its mortgage on that vessel.

On the basis of one billion dollars worth of ships, the Merchant Marine Development Fund would be $15,000,000. This amount, investigation convinces me, would be more than sufficient to care for all deficiencies likely to develop during this period.

Until sold under the terms just stated, all vessels should remain the property of, and should be operated by, the government of the United States.

Stop Shipbuilding

By E. M. Bull

Vice President, A. H. Bull Steamship Co.

I BELIEVE that private ownership is the right policy, and think that Mr. Hurley's policies in certain ways are all right. However, I do think that he should have dwelt more upon the shipbuilding features of his plan. His policies tend to make a declining market. In four years the market will be glutted with ships, unless the United States, England, Italy, France and other countries change their building program. I don't believe that the public will stand for the losses that are bound to accrue, if ships, built at the enormously high war prices for the shipping board, are sold later to private buyers at prevailing world market quotations. It seems to me that it would be far more sensible to cancel contracts for protected vessels still unbuilt, or at least to govern the building by the extent of the development of the foreign trade and the needs for tonnage.

At present it is true that there is a scarcity of ships, but the demands are artificial. When war conditions pass I think there will be too many vessels. Mr. Hurley's general idea is a good one, the terms of sale are "liberal" and the shipowners and the public now have something definite to consider which is worthy of thought and discussion.

Insurance is Problem

By Frank C. Munson

President of the Munson Line

IT pleases one immensely to see Mr. Hurley come out for private ownership. The thing now is to make an arrangement so that the operators can be assured of a fair return. The merchant marine deserves every encouragement the country can give. Mr.

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Hurley may find that the insurance rates he suggested, obtained either from American companies or the government, are a little higher than could be obtained elsewhere.

But I don't want to criticize the plan. I believe Mr. Hurley set forth his ideas so that everybody could discuss them and thus the best arrangement could be reached.

Plan Possesses Merit

By J. B. Austin Jr.

President The Globe Line

I THINK the plan suggested by Chairman Hurley of the shipping board for the future of the merchant marine of this country has, in a general way, a great deal of merit.

There are many minor details that require further elaboration and undoubted changes, such as the insurance feature, the control of rates, etc., but I can see no insurmountable obstacles in the plan as presented to the future successful operation of vessels under it.

The Globe line would be willing to purchase vessels under this plan if the minor details could be straightened out. Of course we would expect, if we purchased vessels, to be permitted to operate them in the trades we select with the approval of the United States government, or in the case of boats for tramping purposes, we should be allowed to so use them without embarrassing or annoying restrictions.

Mr. Hurley's plan is a better solution of the problem than I had expected to see and the most gratifying feature of it to my mind is the strong stand taken against government ownership and operation which should be discontinued.

Good Basis for Study

By P. A. S. Franklin

President of the International Mercantile Marine

IT is very satisfactory that Mr. Hurley has taken such a broad view of the situation as to come out in a definite way and indorse private ownership. This is the only way in which an American merchant marine can be built up. Mr. Hurley's proposals form a good document for a basis from which to discuss the whole subject.

Generally speaking, shipping requires encouragement. It certainly should not be burdened with regulations and conditions which are not applicable to or not enforced upon the foreign flag steamers with which our steamers under the American flag must come in active competition.

Would Buy Under Sales Terms Offered

By Edgar F. Luckenbach

President, the Luckenbach Line

I APPROVE of Mr. Hurley's program in general, especially when he says that the American merchant marine should be privately operated. His terms of sale of the government-owned ships are in the main satisfactory. The proposal to ask as an initial payment but 25 per cent of the value of the ship and allowing the operator 10 years within which to complete the purchase is liberal enough, and the Luckenbach line would be willing to buy ships upon such terms.

It is doubtful to me, however, whether there are sufficient American insurance companies to underwrite the total of this shipping property. The marine is now very large, and it will require more companies and companies of larger capital to afford an adequate insurance market. Furthermore, I do not think the shipping board should retain any authority over the routes or the rates charged by the private operating companies. The government does not undertake to control the markets and the prices of American industries.

If the shipping board is really desirous of having the private American operators take over this property, some assurance should be given that the operator shall not be threatened with government competition. Suppose all the government ships are not sold? What will the shipping board do with those remaining on its hands? Will the board attempt to run those ships in competition with the private companies who have purchased ships in good faith? The threat of government competition will cast a serious doubt over the success of the whole scheme. In addition the

EDGAR F. LUCKENBACH

private operator will also be compelled to take into consideration the decreasing value of tonnage. And the value of tonnage will continue to decrease if the shipping board or the Emergency Fleet corporation is permitted to continue its shipbuilding. The more tonnage the government builds from now on, the less will be the value of the tonnage it has to offer for sale. The private operator does not wish to see the market glutted with ships. This is certain. The government has 14 piers in the harbor of New York, and the privately-owned ships are prevented from making use of them. Many ships are today lying idle for want of pier space. We are compelled to pay as much as $500 a day for a small berth to dock or lay a ship, while these government-owned or controlled piers are vacant, held for the convenience of merchant vessels in the service of the navy or other branch of the government. That is but typical of the conditions resulting when you have the government engaged in an industry which private operators are also engaged in.

Assures Future Success

By H. R. Sutphen

Vice President of the Submarine Boat Corp.

THIS is the first great constructive action that the administration has taken. It comes at a very opportune time, when all who are concerned with the future of the merchant marine are groping about wondering what the policies of the government would be. I think that it will be a considerable surprise for our European friends. Certainly the announcement of a policy of private ownership was a surprise to us.

Nothing could be fairer than to sell the ships that have been built at the world market price for tonnage. There should be no difficulty in arriving at this price. The terms upon which the ships may be purchased from the government are very considerate, and I think that the interest charged is reasonable.

I no longer have any doubt as to the

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future of the American merchant marine, provided, of course, congress follows the recommendation made. I see no real grounds upon which objections could be raised to the provisions of Mr. Hurley's plans. I think that it is generally agreed that a fair return should be made on capital invested. Before the war, there were very few ships, because the shipbuilding yards were not earning a fair return. They were on the verge of bankruptcy, because they had to accept business below cost. Many of the operating lines were faced with a similar problem.

Under Mr. Hurley's plan, the ships are to be sold at the world market price. This will take away from the English firms the incentive for slashing prices and will lead to a development of the American shipbuilding yards. However, it does mean that the most efficient yards will get the business, and that the operating companies must handle the ships in a capable manner or be relieved from control.

I think that the Merchant Marine Development Fund is a splendid idea. It is a new idea in shipping and one that should result in the development of our foreign trade. It will be of considerable assistance to the vessels that pioneer the way, and will not place a burden that the other lines cannot well stand. The insurance feature is to be commended. Briefly, the policy of American built, American controlled, American insured is very satisfactory and I feel sure that America is to have a merchant marine equal to that of any other power.

EMIL P. ALBRECHT

Best Plan Suggested

By George A. Gaston

President of Gaston, Williams & Wigmore

MR. HURLEY'S is by far the best plan that has been suggested. It is definite and literal in its sale terms and in its provision for government regulation is less severe than I expected. Some modification must be made. For example, more elastic provision must be made for the tramp steamship trade. In my opinion it is impossible for the government to fix freight rates, even maximum rates, for the vessel not pursuing regular routes. The exactions of competition are too variable.

The stipulation that one director of each company shall be appointed by the government strikes me as reasonable.

As the government would hold a mortgage on each ship until it was paid for it would have a sort of partnership interest. As soon as the payment was completed I believe the government director should retire.

The provision for a merchant marine fund to aid in the development of new trade routes strikes me as good. I must add, however, that I have not yet had time to study the Hurley suggestions in detail, but they seem reasonable.

Changes Needed to Improve Policy

I HAVE carefully studied the plan proposed by Mr. Hurley and the general principles stated I can heartily endorse. With his suggestions as to some of the details I am unable to agree, not because the ideas are not good but because they do not appeal to me as capable of being worked out practically.

I agree heartily with his statement in favor of private ownership and operation and his expression "the formalities necessarily surrounding government operations are not suited to the successful conduct of a shipping venture, requiring quick decision, sudden reversals of policy and the assuming of great hazards. The successful shipping man in an emergency consults no book of rules. He consults only his wits," also with his remarks as to return cargoes—"Such operations require a degree of special negotiation and freedom from control to which government operations are entirely unsuited. They cannot be standardized. No rule can be laid down which a government employe could follow, for the conditions are constantly shifting, and in this tramp business the competition of the world must be met, facility with facility."

By Emil P. Albrecht

President, the Philadelphia Bourse

I agree with his suggestion that "the ships should be sold at a price which fairly reflects the current world market for similar tonnage," but I think his terms are hardly fair. The cost basis of 25 per cent is all right, but the balance should be extended over a period of 15 to 20 years instead of only 10 years, and it should be permitted the purchaser to pay off the mortgage whenever he can do so.

I cannot see any reason for compelling all purchasers to buy on the same terms and not permit early payment of the mortgage if possible. He says if the principle were deviated from "we would place the big powerful and experienced operator in a position of such great advantages that new blood and brains hardly would dare venture into the business." I should suppose experienced people are what is needed—he says so himself in his argument in favor of private ownership. In my judgment we need not worry about that feature. The inexperienced man will not succeed merely because the big experienced one is not permitted to pay off his mortgage.

Mr. Hurley's suggestion of a "Merchant Marine Development Fund" is perhaps good in theory but I cannot see that it will work out in practice. An interest charge of 5 per cent on the mortgage might be all right at the present time, but there is not a difference of 1 per cent between this and what the government is now paying on the loans.

Furthermore, it is questioned by those familiar with the marine insurance business that the government can carry the insurance on its equity in the ships at 1 per cent less than the regular companies. The government's expenses are as great or greater to carry on this work than are those of the companies and if the formation of new insurance companies is to be encouraged, the government ought not to take away any business that they might carry. It would be all right for the government to carry (and it should do so) any that they could not, but it ought not to take the business away from them.

I feel that the development fund would not amount to anything like

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the figures given by Mr. Hurley—nor would the use of the fund in the way he suggests really be of permanent benefit to the lines assisted as the assistance would really be only a loan to be repaid just as soon as the lines began to be profitable.

While provision should be made for federal incorporation of steamship companies engaged in foreign and interstate commerce, I cannot see the necessity for forming a new corporation by each purchaser. This would seem to shut out all the companies as at present organized because Mr. Hurley's plan limits the stock to be issued to the actual money value paid in on the vessel property.

Furthermore, such limited capitalization would leave the companies without working capital and with the ships mortgaged to the government. I cannot see what they would have as a basis for other financial assistance of which he speaks as likely to be accorded them.

There could be, I think, no objection to a minority interest being held by aliens provided officers and directors were citizens.

The idea of a government director in each corporation does not appeal to me as a practical one. With 1891 ships to sell, and an average of 10 ships to a corporation at an average price of $700,000 each, it would mean 189 corporations with an average cash capital of 25 per cent of $7,000,000 or $1,750,000.

On the board of each of these would be a government director, 189 of them, to serve without compensation except fees for attending meetings—and his thought is because they draw no salary it "automatically insures that no great number of them will be men whose interests are centered in the steamship business." I confess I cannot follow his reasoning.

He also says that the provision that "the government shall name them insures that they will be men of standing, sympathetic with American interests, and alive to the public-service character of the steamship business." I cannot see that this necessarily follows.

These directors, without expenses being paid (at least that is not suggested nor the size of the fee named), beside attending the meetings of the corporation board are expected to attend quarterly meetings at Washington accompanied by members of the operating companies' boards—form a permanent organization and establish permanent offices. They are to handle through committees the questions of trade routes, freight rates, etc., and yet Mr. Hurley says also that the ships should "be sold to and operated by the purchasers under no other restrictions than the terms of the bill of sale and the fixation of maximum freight rates."

It seems to me that the thing to do is to remove every restriction possible and let the purchasers go ahead and hustle for their business. No attempt should be made to dictate to them as to where they shall send their ships or fix rates. The demand for tonnage will satisfactorily take care of both these points.

Of course, for the establishment of regular lines of passenger, mail and freight carriers to countries in which we have what we consider a paramount interest, and to our dependencies, special arrangements must be made, but it is doubtful whether any of the ships now built or building will be suitable for these trades, and if not—inducement must be offered for the construction and operation of vessels in every way equal to or surpassing the foreign vessels now in that trade, and even then the business has to be coaxed away from the old line. That, however, is a separate problem and can well be handled independently of the other one.

The proposed merchant marine development fund, as I said before, may be good in theory, but I do not think it will work out practically

(1) Because I doubt it will reach any such figure as given.

(2) Because the assistance proposed is merely a loan and piles up debt in addition to the mortgage against the ship or the corporation.

(3) Because the method of handling the fund through the associated government directors of steamship corporations, an unwieldy body of men selected because of their having no interests in steamships, would mean in all probability a series of disastrous and expensive experiments and a continual interference with the management of the ships by their owners from men without financial interest in them and therefore without incentive to make them successful.

Let the purchasers run their ships where and as they please (except ships on special routes above referred to) and if they can be operated on an equal basis with their foreign competitors they will succeed. If, however, the cost of operation of ships under the American flag is higher than the cost of operation of similar ships in the same trade under foreign flags, it requires no arguments to prove that either one of two things must be done (1) have the government pay the owner or operator the amount of that excess cost of operation, if there be any, which can be readily ascertained by the shipping board or some other governmental agency, and thus start the American ship and the foreign ship in the race from the same line and carrying the same load, or (2) have no merchant marine under our flag, and go back to the same position (or worse if possible) that we were in before the war began.

The foregoing comments refer only to Mr. Hurley's suggestions—but if his plan is to be considered as a complete one then it is necessary to call attention to several features as to which he makes no reference whatever and which are of great importance in the successful operation of our merchant marine—such as disposition of the wooden ships and any steel ships not sold, provision for manning the ships with American officers and crew, and the revision of our navigation and inspection laws and the regulations under them so that all handicaps, if any exist as is continually asserted by owners of American vessels, shall be removed.

Fears Jap Competition

(Special Wire to the editor of THE MARINE REVIEW*)*

By James J. Fagan

Vice President of the Crocker National Bank, San Francisco

I AM in entire accord with Mr. Hurley's suggestion of the policy of selling the vessels and allowing them to be run by American citizens. I cannot help pointing out, however, that, at the price the British government recently made to British shipowners, the selling price of the American merchant fleet of steel steamers will amount to one and one-quarter billion dollars. At Mr. Hurley's suggestion, it would require three hundred million dollars cash to make the first payment, although, of course, the steamers would not be all finished at once, nor would all the sales be made at once. This is no mean financial problem.

Moreover, will Mr. Hurley's project be attractive to buyers if he puts on the sales the restrictions that he has suggested, such as control of the routes, control of the freights, control of insurance and other details? I think there should be no restrictions by the government, except as to sale to foreigners, and as to trade routes only where the government assists, as proposed by Mr. Hurley.

In addition to all this, Mr. Hurley seems to have entirely overlooked the Asiatic problem in which we on the Pacific coast are very much interested. Does he realize that the Japanese and Chinese are building ships? Does he realize that one of his 10,000-ton deadweight steamers will, even at the British price which is much below our present cost, cost an American buyer one

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and one-quarter million dollars? Does he realize that a Japanese builder could come to the United States and buy the steel plates and shapes and material to build this ship, which amounts to only 3500 tons, for say roughly $200,000, to which he might add his freight from New York to Japan, and the balance of the cost would then be Japanese or Chinese labor? What we on the Pacific coast are wondering is what will be the cost of such a vessel built in Japan or China with Japanese or Chinese labor with American steel which will come into competition with our American vessel costing us $1,250,000? It is generally supposed that the cost of labor in Japan may be one-fifth of ours and if so, such a steamer would cost in Japan or China one-half million dollars. And is it the difference in wages, as Mr. Hurley suggests, that is the serious matter? Is it not rather the annual interest, insurance and depreciation on the difference in cost between the American or British-built vessel and the Japanese or Chinese-built vessel to which we should first direct our attention? Roughly speaking, interest at 6 per cent, insurance at 6 per cent and depreciation at 6 per cent would make a continuous, incessant annual charge of 18 per cent on this difference which is the principal problem that American owners must solve as seen by me. These are all vital questions.

Wants Freight Rates Set in Free Market

By Welding Ring

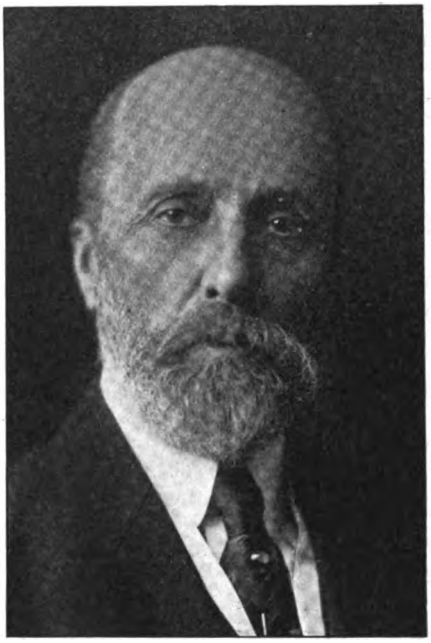
Of Mailler & Querean, and Chairman, Executive Committee, Chamber of Commerce of the State of New York

REFERRING to the plan proposed by Edward N. Hurley, in connection with the United States shipping, I am heartily in favor of it in its general outline, though there are some minor matters that will no doubt receive consideration before such a plan is put into operation. At the dinner given by the National Marine league, the attention paid to the address of Chairman Hurley was intense, as practically all of those present were greatly interested in the subject.

The address indicated a large amount of observation and study by Mr. Hurley, and a very full conception of the necessity for a definite plan to handle this shipping. The statement that caused most applause, and was evidently most acceptable to all present, was that Mr. Hurley was opposed to government ownership. This coming as a direct statement from the head of the shipping board, was an assurance that the shipping business of the United States will be conducted in the future along methods of private operators, and not by a government department. I believe that this is a sound principle in every way, and that such operation will be much more economical and satisfactory than it could possibly be under government control.

As to the question of disposing of these ships, Mr. Hurley outlined very fully the present attitude of the shipping board; writing off a part cost of these vessels, bringing them down to approximately present cost of production, the buyers to pay 25 per cent in cash, the balance to be paid in yearly installments over a definite period, the government receiving interest on the later payments. This practically places the government in the position of the British banks, which have always been accustomed to making loans on shipping to a large percentage of the ship's value, and having them paid off gradually as earnings would permit. It is doubtful whether at the present time our banks or private interests would be willing to advance money on the purchase of ships, merely as a loan, so that the proposed plan of the government promises to be a very helpful one.

There are some details of the plan that do not appeal to me, and I am somewhat in doubt as to whether they could be beneficially carried out. I refer particularly to the fixing and maintaining of freight rates. I believe that this must be a matter of competition and not of government control; otherwise United States shipping would be greatly hampered in competition with that of foreign shipping. It must be a free market for the shipping lines to obtain reasonable rates that will leave a margin of profit over cost and operating expenses, and at same time open to meet any unexpected or keen competition that may arise. Undoubtedly there will be occasions for this where American tonnage enters upon the same trades that have been so long occupied by the British, and by other nations.



WELDING RING

I hardly see how it will be possible for the government to appoint a director on each board that is operating these steamers, and if appointed, of what particular service or advantage he would be. There would be very great difficulty in finding a sufficient number of American shipping people who are familiar with all shipping conditions to accept such positions, and a mere attendance at board meetings would furnish very little information as to the daily operations of the different lines. This, however, is a minor matter that can easily be omitted or changed.

As to the cost of operation, I still believe that it will cost more to carry on the management and operations of American ships than those of Great Britain, and certainly more than those of the Scandinavian nations where wages and supplies of all kinds are much lower and more limited than those provided on American ships. Whether these expenses can be kept down to a point that will enable the Americans to meet foreign competition is something that will have to be determined by actual practice.

I am very confident that now this government having started in with the definite intention of having an American merchant marine, it will not be willing to see this great project abandoned or reduced to a minimum amount of operation. While it may not in all cases be profitable, yet as one of the great means of developing the industries and trade of this country, I am confident that we shall continue to be large owners of shipping, and operate in many trades that have heretofore been entirely under control of foreign tonnage. I think that Mr. Hurley deserves great credit.

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World Charter Market Reviewed b

OUTLINES PLAN

Policy of Private Operation of American Merchant Marine Definitely Proposed by E. N. Hurley

CHAIRMAN HURLEY, of the United States shipping board, has committed himself to the policy of private operation of the American merchant marine. From this fact, the American ship operators have gained considerable satisfaction although practically everyone insists that some amendments must be adopted to the plan advanced by Mr. Hurley for the disposal of shipping board vessels. This is practically a belated acknowledgment on the part of the shipping board of a maritime principle which has already been accepted by England. But Mr. Hurley would have strings to his disposal of government ships, whereas England apparently does not insist upon any.

The new White Star line freighter, BARDIC, of 10,000 deadweight tons capacity, reached New York last month. She is one of the hundred or more British standard vessels sold by the British government to Lord Inchcape and Sir Owen Phillips. These vessels are entirely free from any and every form of government control as adopted during the war. The BARDIC was built at Belfast, Ireland, by Harland & Wolff and makes from 13 to 14 knots. Her voyage from Liverpool was made in 10 days. This offers an imposing contrast to the standard ships built for the shipping board. And the American vessels have not yet been sold, the method of their disposition is just now being discussed.

Delay Proves Dangerous

Owners and operators of ocean-going vessels are well cognizant of this exasperating delay on the part of the American government. The American public, however, is apt to look upon the Hurley proposal as precipitous. While the American flag is being carried to foreign ports, it is being carried on a freighter schedule. The shipping board will undoubtedly continue to allocate its vessels to private operators under agreements, until some national program is worked out, which may be the Hurley program or may be some other. The delay in working out this solution, however, is proving detrimental to the water-borne trade of the United States. Foreign competition grows daily and private American lines are unable to prophecy with any degree of accuracy what services they will be in a position to offer when peace is declared.

The Cunard Steamship Co. has secured a pier at Philadelphia which it will use as a terminal for the monthly freight service just established between that port and Bristol, England. The British vessel, KEENUM, was the first vessel placed in that service. Many foreign vessels docked at Philadelphia last month which has given encouragement to that port, but many of these have undoubtedly been driven away from the port of New York due to the harbor strike at the latter place. Philadelphia, however, has set on foot a movement to re-establish steamship connections with Calcutta, Ceylon and Colombo, a service formerly furnished by the America & India line.

Many large freighters have also gone to Baltimore for unloading. These were from South America and Europe. Several of the European vessels arrived in ballast to take on cargoes of foodstuffs. More than one-half of these vessels docking at Baltimore were originally intended for New York and other American ports. Most of the British boats coaled at Halifax before proceeding to New York. Others refused to come to New York. Passengers leaving for Europe on the OLYMPIC, CARMANIA and other boats were compelled to proceed to Halifax to embark. The sailing of the ADRIATIC from New York was postponed on account of the strike. Norwegian, Swedish and other vessels passed New York by and went to Baltimore and other ports.

The steamship lines, however, are of the opinion that the trouble at the port of New York will be but short lived and preparations are proceeding for the establishment of new services. The Three Star line will have a monthly service from New York to Algiers direct with the steamships ANDRE and WIMBLEDON. Through bills of lading will be issued between New York and Morrocan, Algerian and Tunisian points.

American Ships Tied Up

Considerable skepticism is expressed over the situation at Buenos Aires. The harbor strike has continued much longer than was thought possible, but the foreign element there appears to dominate the situation. So long as exports are boycotted, the movement of grain and other products of Argentine will suffer. Not only American vessels, but English ships as well are now avoiding Buenos Aires. Some American exporters have been compelled to charter sailing vessels in order to fill contracts with South American customers. Shipping in the port has become congested and many vessels are tied up there. Fifty or more American ships are held in Buenos Aires in forced inactivity because of the strike. Some of the German merchantmen have been turned over to the United States but these promise little immediate relief because they will be used as troop transports. The former Hamburg-American liner, ANDALUSIA, has arrived at Phil-

Sees Small Profit

ACCORDING to R. Martens of R. Martens & Co., New York, a steamer costing to build before the war from $25 to $30 per ton deadweight was sold during the last year of the war approximately for $200 per ton or even higher. Already within a few months after signing of the armistice, sea freights have dropped between 60 per cent and 70 per cent, with the consequence that the enormous decrease in the earning capacities of steamers has caused depreciation of their selling value, and a subsequent decrease of the building value. At the same time, while their book value and earning capacity is high, tax charges leave but small profit.

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Experts in This Country and Abroad

adelphia. It is expected that all the German vessels interned in South American ports will also be turned over to the United States. The acquisition of these boats will probably check the tendency of the navy taking over American vessels and turning them into troopers, but it will not release any private vessels already taken over for this service. The shipping board has announced that it will shortly release 10 Dutch vessels, seven to the Royal Netherlands Steamship Co. and three to the Royal Dutch West Indian Mail. After being taken over by the United States as a war emergency, these vessels were used in the West Indian trade. They have been earning the bare-boat charter rate of 35 shillings.

The government is paying a charter rate of $4.15, bare boat, for vessels of a speed up to 11 knots. On some Danish boats it is known that the government is paying a charter rate of $10.75, bare boat. This is a considerable disparity and because of it some suggestions have been made that all foreign ships be released. But the government's requirements for tonnage are so large that it is reported to be in the market for more ships, especially for troop transportation. This is an important fact just now when some of the German tonnage is being acquired and ship brokers are giving the matter careful attention. Charters in the open market are bringing 35 shillings.

Atlantic Rates Advance

Tonnage sought for grain with April-May loading from the Northern Range to France has been quoted at 15 shillings per quarter, with Italy closed at 18 shillings. Deadweight cargo is not being offered. It is said that on net form a prompt vessel could easily have secured $30 or $40 to the French Atlantic, $40 being an offer for April loading. Virginia coal has been fixed at the customary rate to South America, while cotton remained steady, business being booked at $2 per 100 pounds from South Atlantic ports to England. Time chartering continued at 21 shillings for six months.

The shipping board has been allocating the bulk of the government ships to the transatlantic trade although some are being used to bring in the Hawaiian sugar crop. The British lines have advanced their transatlantic rates from $20 to $33.60 a ton or 84 cents per cubic foot. Rates on French vessels have also advanced within the past few weeks The French rate has been quoted as low as $41 but went up to $50 per ton. The shipping board has continued its rate-fixing policy by quoting rates to other European, South American and Far Eastern ports. The market has not reflected these rates to any considerable extent.

Freights have continued unusually firm and exports are piling up at the Atlantic ports. Some exporters have undertaken sales contracts upon the belief that the announced shipping board rates would apply. When the goods were delivered at the port they found no vessels available and the open market freight rate was too high to warrant the forwarding of the shipments. As a consequence these goods have been accumulating in the warehouses. Small shippers unanimously make the same complaint, insisting that they are not able to do any business.

There is accumulating evidence that the great disparity between costs of operating American ships and operating foreign ships is disappearing, although there is no sufficient proof that the difference will ever be entirely wiped out. Some comfort has been derived from the news from Paris which stated that the International Seamen's congress has gone on record as favoring an international minimum scale of wages on ships of 15 pounds sterling or $65 per month. Cardiff seamen have petitioned the British admiralty protesting against the employment of Chinese on British ships. The British costs have been mounting so rapidly that the English have no intention of inviting unbridled competition with the American merchant marine. When the original ocean rate cut was made soon after the signing of the armistice THE MARINE REVIEW declared that there was no evidence that the cut was the forerunner of a rate war. Evidence has since developed indicating that the original cut was the result of a frank conference between the maritime representatives of the allied governments, including the United States, in London and the shipping board was notified long in advance of the proposed action and given a copy of the new schedule of rates about three days before they were promulgated.

Perplexing Problems Are Faced

Shipowners and operators have many problems of their own which are not working out at all satisfactorily. One case in point is the position of the many owners of vessels built prior to the war to meet the requirements of certain charterers. These boats were time chartered for a long term of years, in some cases for almost the whole life of the ship. The cost of running has been doubled by the war, so that, in place of anticipated profit when the contract was signed, the owners must, if the contract is to be carried out on the original terms, look forward to a

RELEASE SHIPS

Ten Dutch Vessels Recently Employed in West Indian Trade to be Returned to Their Owners

Faith Goes Overseas

CONSIDERABLE interest has been aroused by the fact that the concreter FAITH is to make a transatlantic voyage. One object of this decision is to convince European critics of the practicability of concrete craft for overseas service. N. L. Mathiesen, master of the FAITH, is firmly convinced of the vessel's seaworthiness and points to the fact that she has successfully weathered deep-sea voyages aggregating 18,000 miles. Captain Mathiesen is authority for the statement that so far the vessel is absolutely watertight and that it has never been necessary to start her bilge pumps. The FAITH, apparently, is a sound vessel.

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huge loss every year. Some charterers have offered voluntarily to pay an extra charter hire while others demand the original contract be carried out.

On the other hand, in the case of a boat that was sold or built during the war, the owner has a depreciating capital cost to consider which is causing no little apprehension. Rapid depreciation in shipping values is a thing which the shipping world does not wish to see for several years to come.

Oriental Trade is Weak

Rather a peculiar condition exists at present in the charter markets of the North Pacific. There is a strong demand for sailing vessels and auxiliaries while the charters for transpacific steamships and rates on the regular Oriental lines are weak and cargo scarce. Private operators on the transpacific routes are now meeting the level established by the United States shipping board of $12 per ton weight and $14 per ton measurement. However, the Oriental situation is working under a handicap in competition with Atlantic ports because of the differential imposed by high railroad rates from interior originating points to Pacific terminals. This matter has recently been the subject of negotiation with the proper officials at Washington.

Recently a large fleet of Oriental carriers has called at north Pacific ports with the result that practically all congestion has been relieved and the various lines are now seeking cargo. Carriers from the Orient are arriving with but small cargoes and not a few of them are coming in ballast, a condition which has not obtained since three years ago when the transpacific movement began to assume enormous proportions. Operators from that section are concerned about the differentials in favor of Atlantic ports and they hope for further concessions in through rail and water rates so that the Pacific may operate on a level with New York and other eastern terminals.

Vessels for Pacific

The shipping board has assigned a number of new vessels to the Pacific. Some of these will load for China and Japan and others for Vladivostok. Practically all business is now being booked at shipping board rates and there is ample space for all freight offering. Heavy orders for railroad ties placed with British Columbia and Washington mills have created a demand for carriers and a large fleet of wooden vessels is now fixed to move this cargo. These ties are bought for delivery at United Kingdom and Atlantic ports. Several vessels have been taken for British ports from British Columbia at from $42 to $50. The shipping board rate from north Pacific to Atlantic ports has been fixed at $16 for ties and $18 for lumber and several cargoes are now loading at these figures, the vessels employed being wooden steamers constructed at north Pacific yards. Three lumber cargoes for north Cuba have been dispatched from Puget sound at $21 and further business is in sight, although lumber exporters are hoping for lower water rates. They claim they cannot compete with the yellow pine districts under present tariffs. To north Atlantic British ports, the shipping board rate on lumber is fixed at $22.50.

Three vessels have been fixed to carry barley from San Francisco to Copenhagen at $40 per ton net, this being considered a good rate under present conditions. A French sailing vessel has been taken for grain from San Francisco to United Kingdom at 110 shillings, this being the first fixture of this kind since the United States entered the war. The normal rate for this business before the war was about 25 shillings.

Conditions Becoming Normal

Owing to the high rail rates across the country, Pacific coast steel shipbuilders are facing a condition that is causing some worry and they are now considering the plan of operating a line of steamers through the canal to move their steel to the west coast in shipload lots. There is now no demand for carriers to bring copra from the South Pacific and return cargoes from South America and the islands are limited. Lumber freights from north Pacific to Australia are quoted at about $30 to Sydney and $35 to Melbourne with South America on a parity.

Altogether the situation is thought to indicate that conditions are beginning to readjust themselves on a peace basis with supply and demand governing. In well informed circles it is believed that Oriental rates will touch the $10 level after which supply and demand are expected to govern future commitments with the rate likely rising to $20 within the next six months providing the business expected materializes.

Atlantic Trade is Heavy

Steamships leaving Boston for Europe are bulging with provisions and foodstuffs. The main trouble with exporters is that sufficient tonnage is not obtainable. On freight for England. the British government is taking about two-thirds space while the remainder is commercial booking. Piers are filled with merchandise awaiting shipment, the offerings originating in New England and the Middle West. Thus far, the railroads are having no special difficulty keeping pace with business billed to the transatlantic terminals at Boston but, as the British government requires less space in its ships, the rails will be taxed, it is believed, to keep abreast of the outward flow of freight.

Grain is arriving in large quantities and the elevators at East Boston and Charlestown, served respectively by the Boston & Albany and the Boston & Maine railroads, are kept well filled although several ships for England last month each took upward of 150,000 bushels of wheat. The export of oats is falling off, most of that cereal going to France for the army. A marked falling off in shipments of apples to London and Liverpool is noted. The latest consignment of any size being about 12,000 barrels, for London. Total apple shipments since the season opened range round 400,000 barrels.

Quantities of condensed milk and other patented foods are being forwarded to Liverpool. A recent consignment of milk weighed 1200 tons. Lesser shipments of milk have been going forward all winter while movement of pork products continues about the same as in prewar days. Quantities of wheat flour substitutes are being sent to Rotterdam for the Netherlands government and to Bordeaux for the Swiss. The French high commission is being supplied with flour substitutes, principally corn flour and corn meal. Some of these cargoes are transported in American bottoms and the lake-built steamers have been employed in the trade with generally satisfactory results although their capacity is small.

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Liners Converted Into Oil Burners

Porto Rico Line Makes Extensive Repairs to Steamers San Juan and Ponce—Oil-Burning Will Replace Coal-Burning Vessels

By V. G. Iden

EVERY shipowner in the world today faces the problem of repairs. And these same owners are confronted with undeniable economic reasons why the repairs should be postponed. A step recently taken by the Porto Rico line, therefore, in regard to two of its leading passenger boats stands out as a case of peculiar interest to the shipping world. Overnight, almost, the repair work on these two vessels doubled the capital investment therein, and yet these ships are to be placed back on a run which has been maintained practically the same as it was previous to the war.

In repairing the vessels, both the passenger and the freight accommodations have been considerably enlarged. In addition, the liners have been converted from coal-burners to oil-burners. East coast steamship lines have been composed of coal-burners. Despite the popular and accepted economies of oil-burners, these lines have not adopted this kind of fuel. The war has taught the lesson of oil burning, it has encouraged an increased production of oil and has brought the shipping problem forceably to the attention of the oil companies. Many shipping lines have long been willing to adopt oil as the natural bunker fuel, but up until this time the oil companies had not been willing to lend the proper encouragement. An explanation of this situation and a tangible example of how it has been altered is shown in the repair work which is being brought to a conclusion at the yards of the Staten Island Shipbuilding Co., New York.

The public was quietly informed a few days ago that the New York & Porto Rico line has repaired and placed in the New York-Porto Rico service the steamships SAN JUAN and PONCE. The announcement would not cause great surprise during normal times and even at the moment it is doubtful whether the shipping world is actually cognizant of the reasons which led to the repair of these ships. The curiosity of the steamship world would not be raised necessarily because the Porto Rico line did not choose to make known at the same time the full extent of the repairs nor to give any indication of their cost.

The repairs made cost more than the original building cost of the vessels about 20 years ago. The original cost of the ships was approximately $300,000 each, so it is not difficult to figure generally what the company has done. In view of this expense, the questions naturally arise, why was it attempted and why does repair work cost so much today? Generally speaking, the repairs consisted in a complete overhauling of the hull and machinery, transformation from coal burning to oil burning, and additions to the passenger accommodations. The passenger and cargo capacity of the two ships has been increased about 25 per cent and the speed has been increased approximately 2 knots.

Repair Yards Are Busy

Repair work, on the Atlantic coast at least, is confined almost exclusively to government requirements. A total of 89 merchant ships have been taken over by the transport service and made into troop carriers. Hundreds of ships are being turned back to their owners and before this return can be completed, the government is compelled to recondition the vessels. Repair and drydock work, therefore, is booming and all departments are working overtime, especially the drydocks. Repairing today is costing more than actual shipbuilding. One prominent naval architect estimated that whereas shipbuilding has increased two and one-half times the prewar cost, repair work costs three times as much as before the war. This was the reason the Porto Rico line was compelled to make an abnormal outlay on the SAN JUAN and PONCE. It is also an explanation why, aside from the work done on these two vessels, little commercial drydocking or repairing is being attempted at the present time.

The company had three passenger ships in the New York-Porto Rico service and two in the New Orleans-Porto Rico service prior to the war. The steamers BRAZOS and COAMO were permitted by the government, when ships were requisitioned during the war, to continue running out of New York and they are still in this service. The CAROLINA, however, was shelled and sunk in July, 1918. The other two vessels have not been adequate to take care of the trade, so the SAN JUAN and the PONCE, previously on the New Orleans run, were taken off and repaired for the New York service. Had this not been done, it is doubtful if the company could have maintained its prestige in the Porto Rico trade. The remainder of the fleet of the Porto Rico line are freighters.

The company obtained permission from the government during the war to undertake the repair work on these two vessels. Contracts for the new boilers were let with the Newport News Shipbuilding & Dry Dock Co. on March 27, 1917. The SAN JUAN did not go into drydock until Sept. 20, 1918. It required five months to complete the work. She was delivered to her owners and started on her first voyage out of New York on March 9. The PONCE went into the repair yard on Oct. 20, 1918, five months also being required for the work. The time on the drydock for these two ships is between six and eight weeks. This is an important item because drydocking is extremely expensive just now. Practically all the fleets of the world are waiting to be drydocked, surveyed and patched up, now that the war is over and it is necessary to work overtime on all these vessels. This item is what is running up the cost of repairing to a level greater than new construction.

The task of repairing the Porto Rico line's two vessels was entrusted to the Staten Island Shipbuilding Co. Considerable satisfaction has been expressed by the owners over the quality of the work done and they consider proper recognition due the repair yard.

The boilers contracted for in 1917 which replaced the old boilers in these two vessels are of the Scotch marine type. There are two in each ship. They are 14 feet 9 inches in diameter and 11 feet 5 inches long and are allowed 180 pounds working pressure. There are three furnaces to each boiler. These have a heating surface of 5100 square feet, and a grate surface of 131 square feet. Mechanical burners are used in connection with forced draft. The original triple-expansion engine, driving a single screw was retained and rebuilt. This has rendered the engine room practically as good as new.

By changing the vessels to oil-burners their steaming radius has been increased to 6000 miles, an addition of 2500 miles over their former steaming radius. The ships, therefore, could bunker with oil at New York, go to Porto Rico, return and make half of a second voyage

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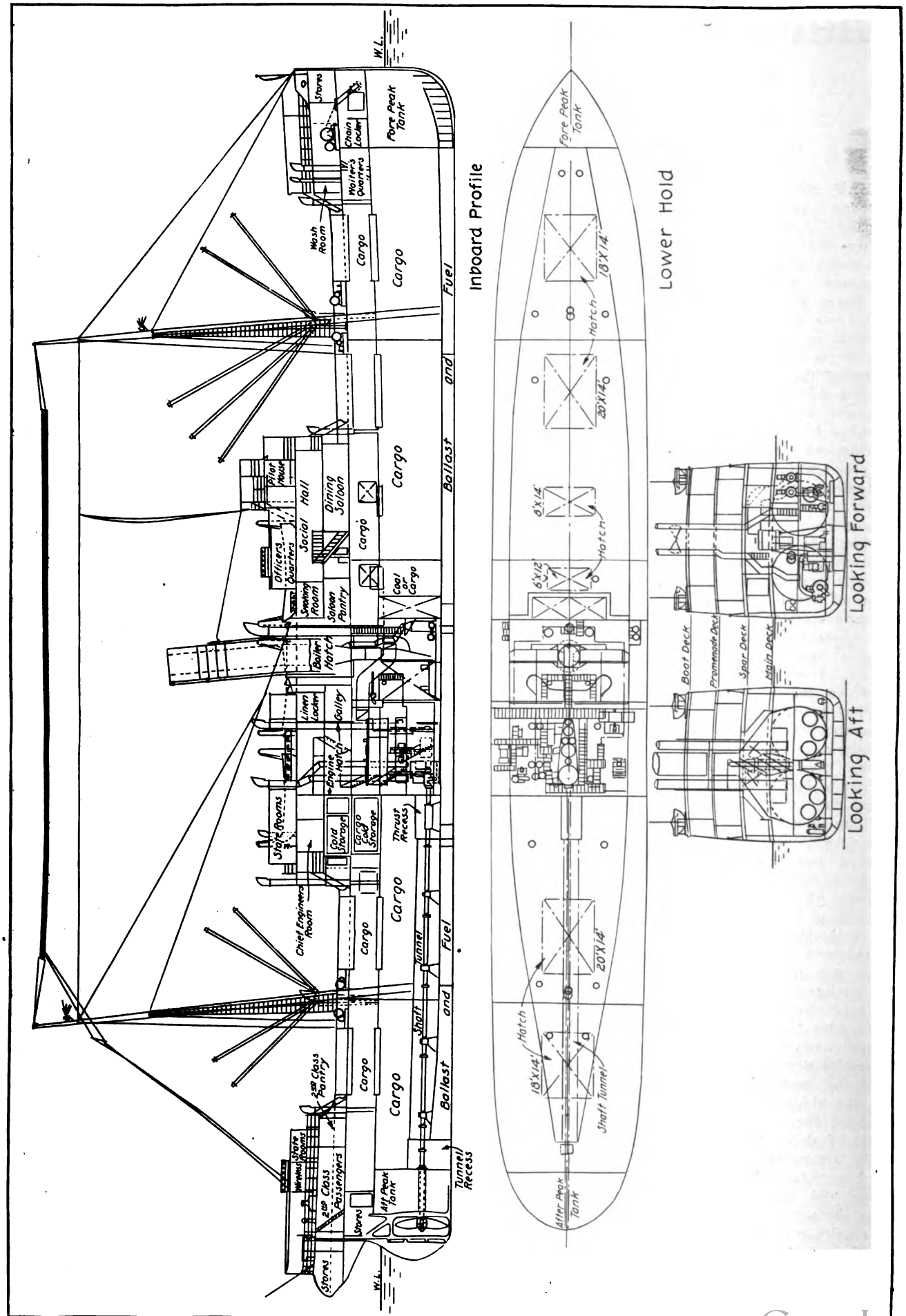

INBOARD PROFILE, LOWER HOLD AND SECTIONS OF THE NEW YORK & PORTO RICO STEAMSHIP CO.'S FREIGHT AND PASSENGER STEAMERS PONCE AND SAN JUAN

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without replenishing. The SAN JUAN, for instance, had a speed of 10½ knots when burning coal. When out on her recent trials, it was easy for her to speed up to 12 knots. The change also permitted the removal of the coal bunkers which added 500 tons to her deadweight, or 25 per cent to her cubic cargo capacity.

In addition to installing new boilers and rebuilding the engines, new pumps were installed, the hulls were scaled inside and out, deteriorated rivets replaced, the double-bottom tanks scaled and the cement in the bottom hold removed to make ready for oil bunkering. All auxiliary machinery was repaired. The steam windlasses and steering gears were repaired. The deck windlasses were replaced with new ones. New bunker bulkheads were installed because of carrying oil fuel. Transverse bulkheads were built in to meet with the requirements of the present navigation law. These are expected to keep the vessels afloat should they have a collision at sea. New and additional lifeboats were added, and a new fire-fighting apparatus installed. All the latest requirements of the United States steamboat inspection law were adhered to. It was necessary to add to the crew quarters. When these ships were built the law required only 12 square feet to a man, whereas the law now requires 16 square feet in the crew quarters for each member.

The tailshafts were drawn and new propellers attached. The fresh-water tanks were built up and a settling tank installed in the engine room. This is used in case oil seeps through to the fresh-water tank in the double bottom. The water is pumped out into the settling tank and there allowed to settle, the oil being drawn off from the top and the fresh water pumped back. This settling tank is the only thing that takes up any part of the old coal bunker space. The engine-room force has been reduced. The old engine crew consisted of 78 men, whereas the new crew is 68 men.

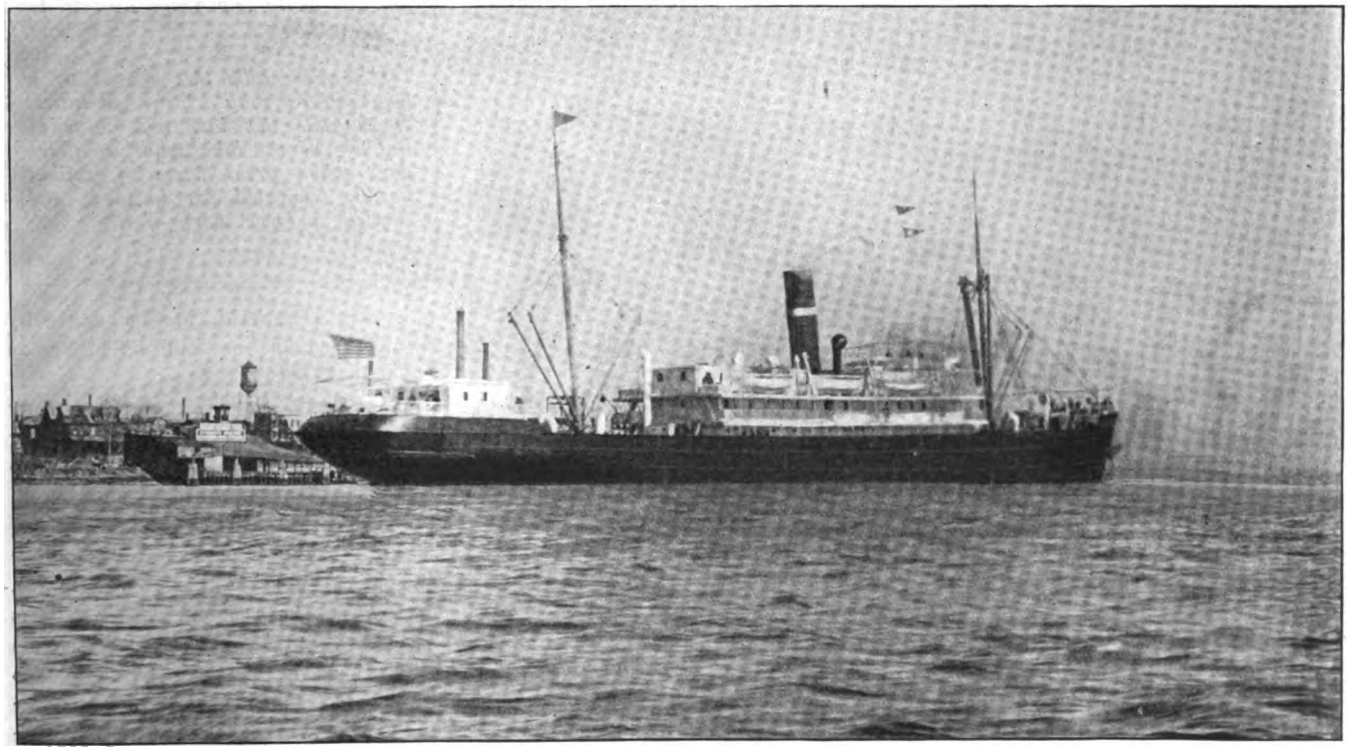
New York shipping men recognize the merits of oil-burning ships and many have long wished to place them in operation. A beginning has not been made before this because it was impossible to find an oil company willing to contract to furnish the fuel oil over a period of 10 years. Regular line ships estimate that it is necessary to have such a long-time contract for bunker before attempting to engage upon a particular run. Now the oil companies are offering to sign up long-period contracts to furnish bunker oil and from this time on, it is expected regular line ships will begin to burn oil much more generally than before. A noted naval architect, in commenting on the merits of oil-burning ships, said that it has been observed in a coal-burning vessel that the steam pressure varied as much as 15 pounds, owing to open doors necessary when firing with coal. On the other hand the steam pressure on an oil-burning boiler is not subjected to any such variations and may not vary over 2 pounds. With such constant steam pressure it is possible to obtain a constant speed.

Additional electric power has been installed on each ship. Heretofore each had a 15-kilowatt machine. A new 25-kilowatt generator has been installed. This increases the lighting and working current on board ship. The steam heating, sanitary and plumbing systems have been renewed.

The SAN JUAN was formerly capable of taking 60 first-class and 18 second-class passengers. As rebuilt she carries accommodations for 70 first-class and 30 second-class passengers. Before she left on her first voyage early in March, she had been sold out completely for the first two voyages.

The chief engineer's quarters have been moved from the main deck to the promenade deck about midships and a stairway built directly from his quarters to the engine room. An office for a surgeon, and a dispensary has been installed amidships on the promenade deck. Moving the chief engineer to the promenade deck has made it possible to revise completely the quarters for the crew on the main deck just aft of the galley and pantry. The captain's quarters and the wireless room are on the after promenade deck. The renovations on the PONCE will be identical with those made on the SAN JUAN.

Theodore E. Ferris, naval architect, New York, was engaged to design the repairs to the SAN JUAN and the PONCE. The work was executed under his supervision.



STEAMER SAN JUAN LEAVING FOR THE WEST INDIES—THIS VESSEL AND HER SISTER SHIP, THE PONCE, WERE RECENTLY REFITTED THROUGHOUT AND EQUIPPED WITH OIL-FIRED FURNACES

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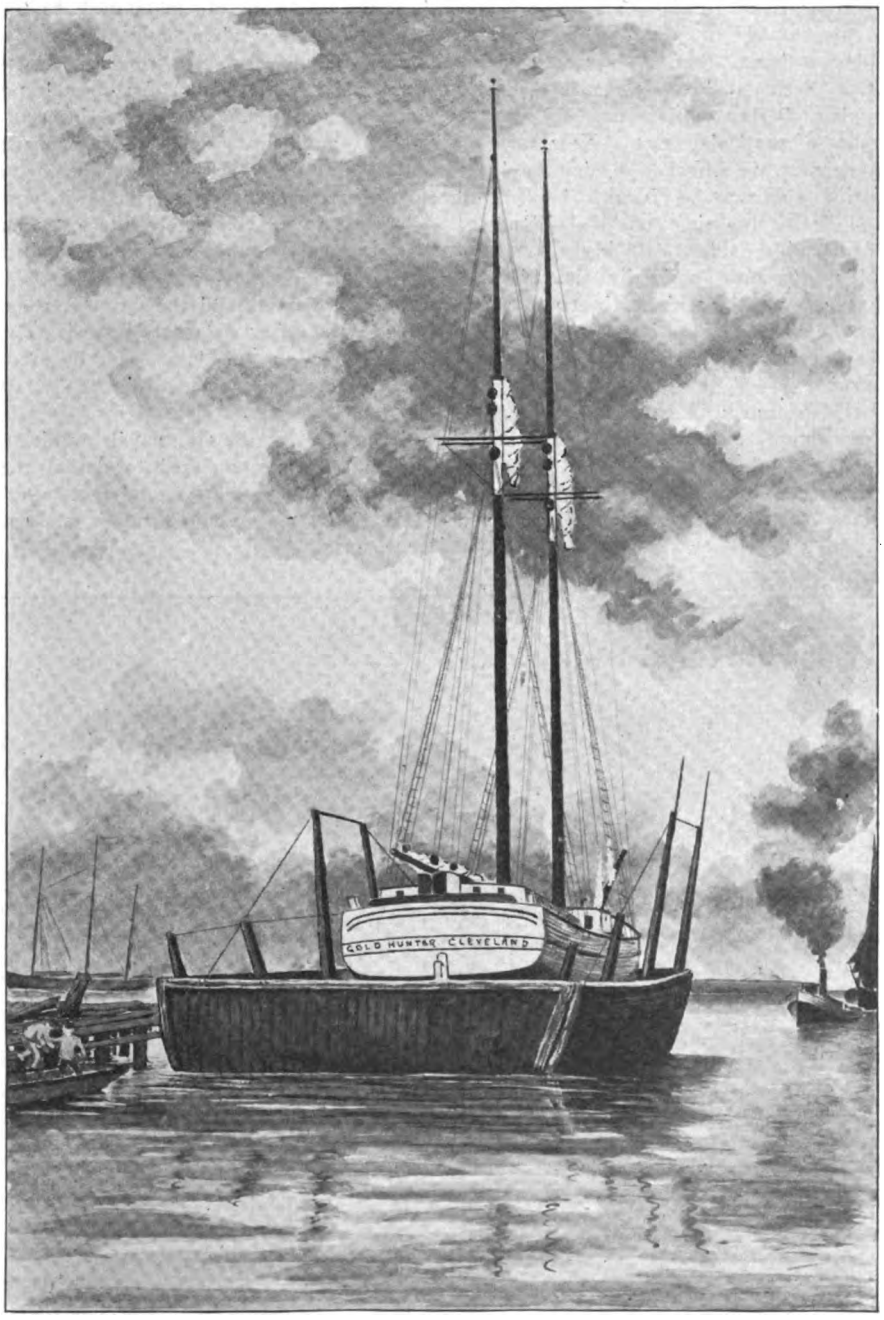
The Heyday of Lake Windjammers

The Busy Scenes of Bygone Days When Sailing Vessels Were in Their Glory on the Great Lakes Are Recalled and Graphically Described by an Eye Witness

By F. R. Rossel

THE few dingy schooners left on the Great Lakes today, toting lumber on Lake Michigan or coal on Lake Ontario, are like the remnant of a noble race that has passed. One of the old-time captains told me that in the seventies he had counted 125 sailing vessels in one 5-hour watch on Lake Michigan. Another skipper, who commanded a tug in Buffalo harbor in the sixties, told me of seeing 40 to 50 sailing vessels in the lake in the early morning, waiting for tugs to bring them in. Their white sails dotted all the lakes and often the harbors were choked with them. They were an inspiring sight.

Speaking of the sailing vessels of that period, the old tugman said: "They kept them up like dolls." A paragraph by a Chicago writer in 1897 referring to sailing vessels then in the Chicago river paints a charming picture, one with a touch of sadness. He wrote: "The branches of the river contain many vessels which will never know another fitting-out time. When they came out they were the pride and wonder of marine men. When the wind went to the southward, they started out 50 strong. Their sails were new and white, their masts were scraped, their decks were scoured and as they drove past Grosse Point they made a beautiful picture. Those were the days when the captain was a captain, for he generally owned his own boat and sailed her as he willed."



SCHOONER IN FLOATING DRYDOCK IN BUFFALO HARBOR IN 1878. IN BUFFALO, THERE WERE TWO OF THESE DRYDOCKS BUILT FROM HULLS OF OLD SIDE-WHEELERS. FROM A SKETCH MADE BY THE AUTHOR

Song of the Seventies

WATCH her, catch her, jump up in her ju-be-ju,
Give her the sheet and let her go, we're the boys to put her through;
You ought to hear us howling and the wind a-blowing free,
On our lively trip from Buffalo to Mil-wau-kee.

* * *

Memory recalls this chorus of a lake sailor's song of the seventies. It suggests the dash and color in the life of the lake sailor of those days when great fleets of sailing vessels competed for business and carried a large part of the bulk freight.

The fleets that sailed 50 strong were grain vessels and each sailing meant a grand "free-for-all" race up Lake Michigan and down the length of Lake Huron, with close sailing and great carrying on of canvas. The rivalry to be first into Lake Erie was, of course, very keen. Other fleets carried whole forests from Wisconsin and Michigan ports south to Chicago or east to ports on Lake Erie, Lake Ontario and the River St. Lawrence in the shape of lumber, timber, staves and shingles. Coal was the

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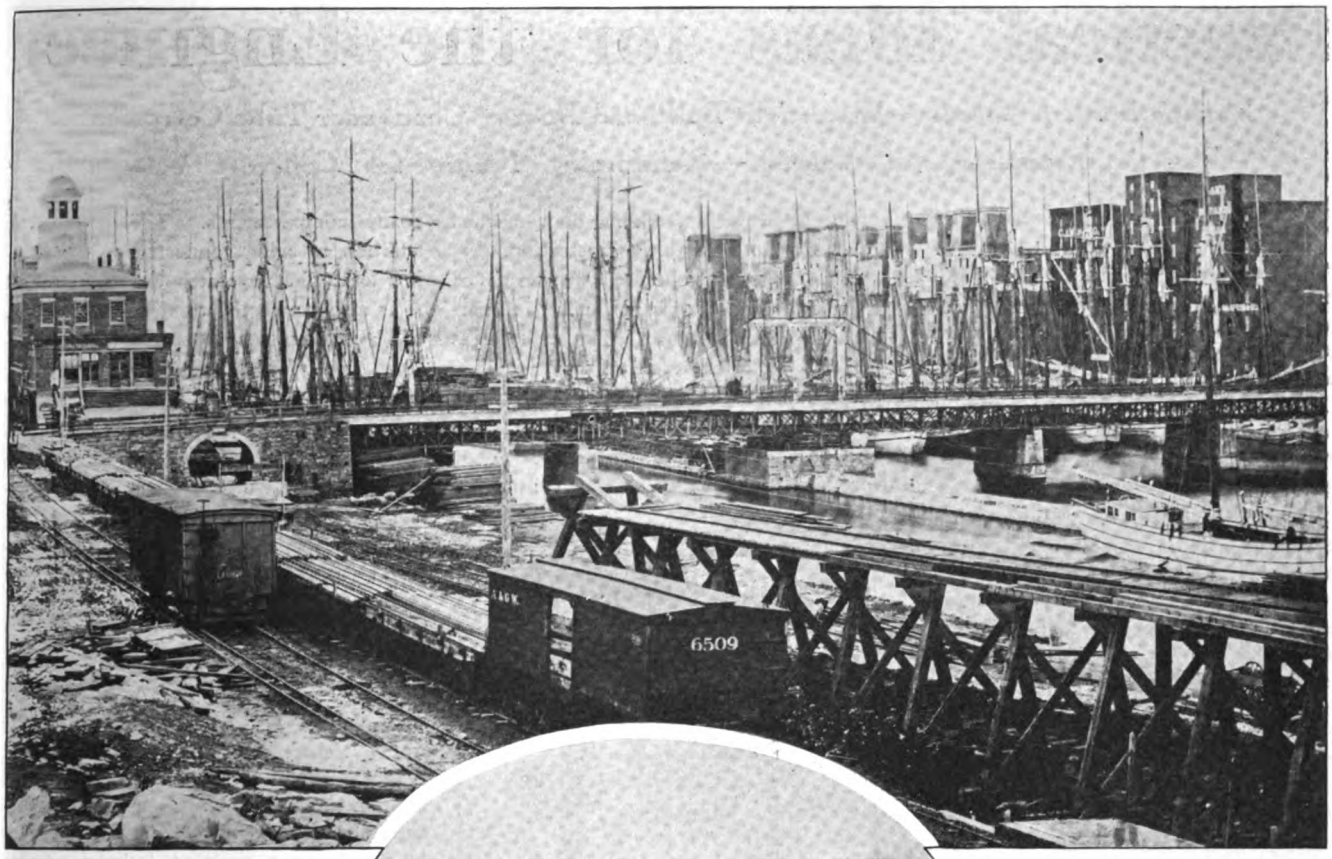

principal westbound freight, although sand ballast was often used in cases where coal was not available. All of these vessels were of the centerboard type because the rivers and harbors were comparatively shallow, which neccessitated light-draft vessels. There were no fine models among the vessels that went east to Lake Ontario and the St. Lawrence; they were flat-bottomed, straight-sided, full at the ends, built to fill the locks of the Welland canal, and they had bowsprits that hoisted up straight in the air while passing through the canal.

The lake fleets of the sixties and seventies comprised brigs, barks and barkentines, as well as fore-and-aft rigged schooners of two, three and four masts. The raffee, a 3-corner sail carried at the top of the foremast over a square yard was much used on the lakes although almost unknown on salt water. According to figures issued by the commissioner of navigation, there were more sailing vessels on the lakes in the year 1878 than in any year before or since—1855 vessels. The Hon. Crockett McElroy, a retired Great Lakes skipper, said in his excellent history of the Great Lakes: "The era of the greatest number and of the largest and finest sail vessels was from 1860 to 1885. The year 1866 was a most profitable year for lake vessel owners, and the following year saw the completion of a ship canal with 16 feet of water through the St. Clair

(*Concluded on page* 240)

OSWEGO HARBOR IN THE YEAR 1870 IS SHOWN IN THE UPPER VIEW WHILE THE LOWER VIEW SHOWS BUFFALO HARBOR FROM LIGHTHOUSE PIER AT THE MOUTH OF THE RIVER AS IT LOOKED IN THE SIXTIES—THE OVAL SHOWS AN OLD-TIME LAKE TUG BOAT

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Practical Ideas for the Engineer

Raising Sunken Vessels—Watertight Bulkhead Doors—Condensor Tube Corrosion —Electric Propulsion of Vessels—Reinforcing Frame for Concrete Vessels

AS soon as peace is declared there should be a great harvest of sunken vessels which can be raised to the surface. The improved methods now available will permit of raising vessels from much greater depths than was formerly possible. Before the war the value of a ship and its cargo was on the average about $125 per ton. At present it is worth three times as much.

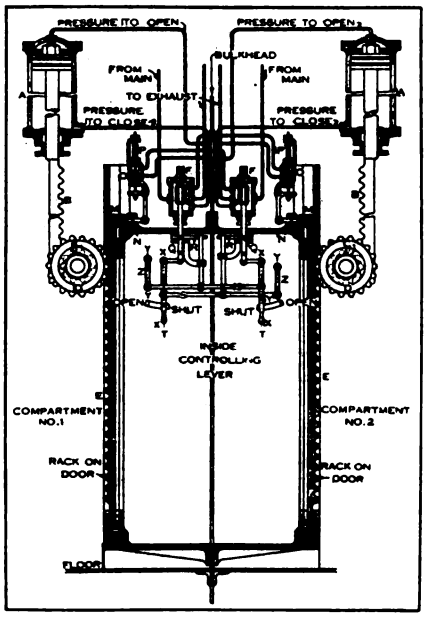
If sunken vessels are only partially submerged, it is sufficient to close all openings in the hull and then pump out the vessel. If totally submerged, there are four processes: (1) To build a cofferdam over the vessel and pump out the water from it faster than water enters—this method was employed for raising the WALKURE at Tahiti; (2) to build a tight cofferdam around the hull, then pump it out and repair the damage—this was the method used in raising the MAINE and the LIBERTE, the latter of which was filled with projectiles; (3) the water may be forced out of certain compartments of the vessel by compressed air, but these compartments must first be rendered watertight; (4) the breach in the hull may be repaired temporarily by divers and then a cofferdam may be built over one of the hatchways and the water pumped out of the hull sufficiently to enable the vessel to be refloated—this was the method successfully adopted in the raising of the Japanese cruiser MIKASA—the work of the divers was done at depths of 40 to 65 feet of water.

Watertight Bulkhead Doors

In a paper recently presented before the Institute of Marine Engineers by Lieut. I. Toro, Chilean navy, he described a system of watertight doors, which are designed to provide ready means of communication from one compartment to another. The door can be operated from either side.

In this system a hole is cut in the bulkhead, giving entrance to a chamber of rectangular shape. The joint between the chamber and bulkhead is made watertight. The chamber is large enough to enable two men to move about easily in its interior. Two openings are provided, one on either side, each opening being fitted with a sliding door marked *E* in the accompanying illustration.

The doors are operated by means of a rack and pinion gear which is actuated by hydraulic power. The cylinder is shown at *A*. The piston rod is made integral with the rack *B* which in turn drives the pinions *C* and *D* communicating the desired motion to the door through the rack *E*. The controlling



WATERTIGHT BULKHEAD DOOR

apparatus is simple, consisting of a lever *T* which operates the valve *F*. To prevent both doors being operated simultaneously, locking bolts *R* are provided. Thus, one door always remains closed.

The working system, by which men can go from one compartment to another, is as follows: The door at one side of the chamber is first opened by means of an outside controlling lever. This allows the man to gain admittance to the cell. The door is then closed by the inside controlling lever. When the door is properly closed, but not before, the opposite door can be operated.

Under ordinary conditions, each door is controlled from its respective side. Under abnormal conditions, however, panic-stricken men might forget to shut the door of the safe compartment, thus preventing other people from escaping. To guard against this, an emergency arrangement is supplied which permits the controlling of the doors from opposite compartments. The lever *S* in addition to being connected to the rocking lever that operates the locking bolt *R* is also connected to the arm *Z* which is pivoted on a shaft fitted in a watertight and air-tight manner through the side of the chamber. To the outside end of this shaft is connected an arm which is fitted with a handle and an index which works between the positions open and shut.

In this manner the possibility of leaving men locked in the compartment is eliminated.

Condenser Tube Corrosion

Longer life of condenser tubes is to be secured rather by selection of materials, and care in manufacture than by modification of operating conditions, according to H. L. H. Smith in the *Electric Railway Journal*. Apart from the corrosion of iron and steel and that of alloys used in engineering structures, the loss by corrosion of condenser tubes is one of the most serious troubles encountered in the application of alloys.

A theory now favored concerning the cause of corrosion in condenser tubes is that it is due to local currents between neighboring parts of different microstructure. The rapid corrosion of muntz metal in salt water may be attributed to the alpha and beta brasses acting as electrodes, with the salt solution as electrolyte. Admiralty metal is of a more homogeneous microstructure and therefore less subject to corrosion, besides which the small percentage of tin exerts a valuable but imperfectly understood protective influence. There is a tendency to use alloys with more copper, up to 95 per cent, but pure copper is not likely to be used because, apart from its high cost, there is risk of copper oxide being formed and entering into solution with molten copper during the manufacture of tubes.

The cause of "season cracking" is considered to be electrolytic. Internal strains produce a difference of electrical potential between different parts of the apparently homogeneous metal, and moisture provides the electrolyte. Without initial tensile stress "season cracking" does not occur. If initial tensile stress be existent there is sufficient lack of homogeneity on the surface to start corrosion, and the intensified stress at

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the bottom of the resultant grooves causes intensified corrosion. Initial compression stresses do not seem to favor corrosion.

Annealing after the first drawing, at a temperature of 400 degrees Cent. or thereabout removes internal strain and produces a finely grained microstructure, with none of the coarse structure which results from annealing at temperatures within or above the critical range. Fair success has been obtained by springing brass rod so as to obtain compression stresses in the surface; possibly similar results may be achieved in the case of tubes.

Careful specification of condenser tubes is important in reducing maintenance costs and in reducing contamination of hot well water.

Electric Propulsion of Vessels

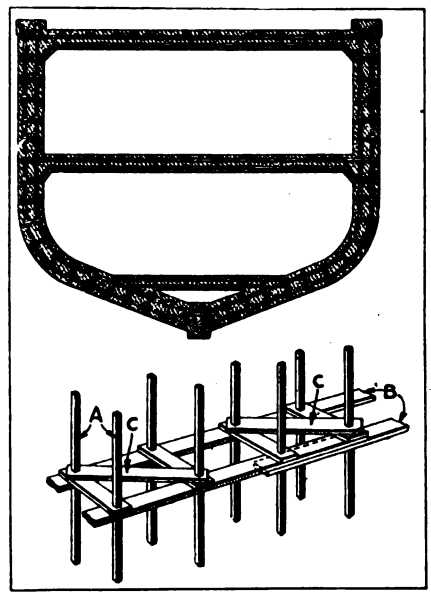
A general description of some of the results recently obtained in the propulsion of vessels by electricity, not confined to one country but giving a general idea of world-progress, was described in a recent issue of the *Journal of the Engineers' Club of Philadelphia.* After pointing out that for land work the steam turbine is rapidly supplanting reciprocating engines where large units of power are required, and noting that such progress has been slower in shipping, the author proceeds to describe some actual installations.

The motors and speed-reduction gears of the steamship WULSTY CASTLE are described. Each of the packet boats HELIOPOLIS and CAIRO had three propellers, running at 350 revolutions per minute. The FRANCE had four propellers running at 250 revolutions per minute and the LUSITANIA four, running at 190. Other vessels are described in which reciprocating engines and turbines are both employed. The hydraulic reduction gear of Fottinger was used in a tug of 500-horsepower in the port of Hamburg, also in a large mail boat, the KONINGEN-LUISE, sunk by the allies early in the war. The Cunard Co.'s vessel TRANSYLVANIA has reduction gearing and two propellers running at 128 revolutions per minute. The electric transmission of power, however, obviates many of the difficulties encountered with mechanical gearing, and the reversibility is perfect.

The arrangement of the plant on the steamship MJOLNER is described. The electric generator is coupled direct to the steam turbine, being a 3-phase synchronous machine which supplies current to an asynchronous motor. Two such motors each developing 450-horsepower drive the propeller shaft through gearing, the result being that while the turbine runs at 7200 revolutions per minute the propeller runs only at 90, owing to the electrical and mechanical reduction in the ratio of 80 to 1. In actual practice the speed of the propeller can be reduced to 12 revolutions per minute by the use of resistances in the electrical circuit.

Reinforcing Frame for Concrete Ships

Builders of concrete vessels are confronted with the important problem of efficiency reinforcing a hull built of practically unyielding material so that it will successfully withstand the stresses



DETAILS OF FRAME CONSTRUCTION FOR CONCRETE VESSELS

and strains brought to bear upon it while laboring in a heavy seaway.

To provide means of reinforcing a concrete vessel, both longitudinally and transversely, Cotter T. Bride, Washington, recently obtained a patent on a reinforced ship. The invention provides for a double reinforcing frame with means for tying the outer and inner frames together.

This construction is shown in the accompanying illustration, in which *A* are the reinforcing bars which run from the keel to the deck, while the bars *B* are laid longitudinally. The tie pieces *C* are arranged at convenient intervals and fasten the two frames together.

The upper illustration is a midship section of a vessel reinforced in the manner described. This is a double-decked vessel and, as indicated, the same arrangement as shown in the lower view is used to reinforce the decks. It is pointed out that the frames are so constructed that they can be assembled by comparatively inexperienced labor. The bars *C* are made in two designs, one to run crosswise and the other diagonally. These are readily formed by cutting off from bar stock and punching the holes to accommodate the reinforcing bars. Thus, once the design is decided upon it is a comparatively simple matter to fabricate as many thousand of these pieces as are necessary.

It is said that the reinforcing frame is adapted for vessels that are poured in molds or for those wherein the plastic material is spread on with trowels or other similar tools, according to the Italian practice.

To Investigate Welding

With the object of thoroughly investigating all branches of welding, the American Welding society was recently formed. This society will take up the work begun by the welding committee of the Emergency Fleet corporation during the war.

The object of the society is to bring together persons from all branches of industry where welding processes are used. These processes include forge, electric resistance, spot, arc, gas, thermit welding, etc. Six degrees of membership are included. These are arranged to accommodate all classes of manufacturers interested in the subject of welding as well as to provide a class for honorary membership.

The society will carry on exhaustive research work from the simplest to the most complicated characters. Among tentative plans for this work are the determination of the best current to use for various kinds of electric welding, proper methods for making up both gas and electric welds, determination of proper angles of bevel for plates to be welded, change in metal characteristics caused by welding, methods of assembling to eliminate stresses, reactance in long gap spot welders for thick plates, relative value of various forms of joints and methods for inspecting and testing completed work.

The subject of standardization will be given careful consideration and the conclusions arrived at are to conform to the procedure established by American engineering standards. The society also will take an active part in planning how welders should be trained and how their proficiency is to be determined.

Official inquiry into the wreck of the PRINCESS SOPHIA, which was wrecked near Skaguay, Alaska, last October, with a loss of 300 persons, is still under way in British Columbia. The only survivor of this mishap was an English setter dog which swam ashore and appeared days later in a famished condition at a camp.

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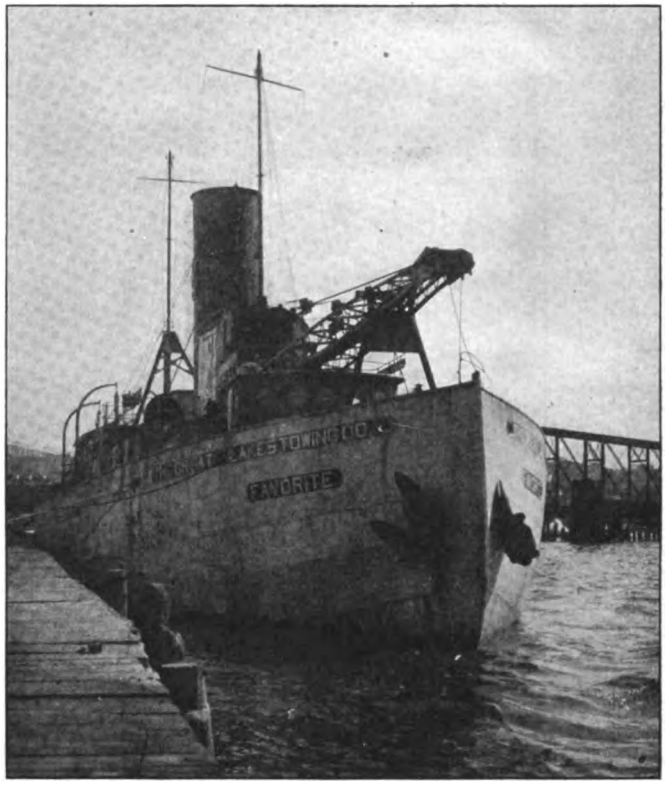
Great Lakes to Have New Wrecker

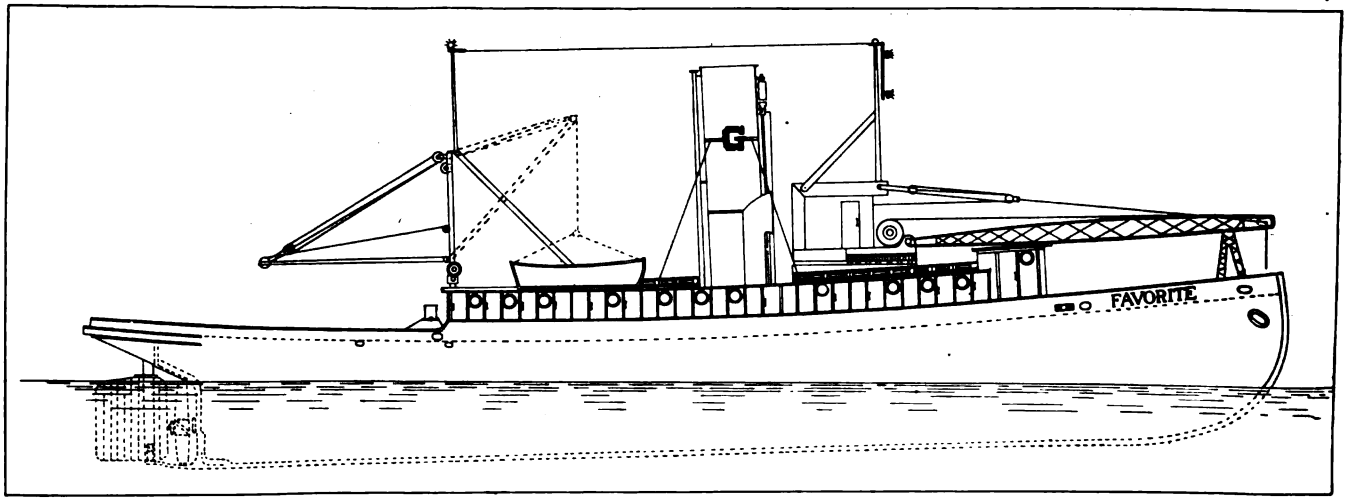
Craft is Complete in Every Detail and is Named and Designed After the Original Vessel Now in Foreign Waters

WHEN the United States government took over the Great Lakes wrecking steamer FAVORITE, late in 1917, for use in foreign waters, her owner, the Great Lakes Towing Co., immediately made plans to replace the loss. Although shipbuilding operations have been seriously handicapped on the Great Lakes through lack of men and material, a new wrecker, also named the FAVORITE, now lies at the company's docks complete and ready for commission. Capt. Alex Cunning, master of the old FAVORITE will command the new craft while James Callahan, who also served on the old vessel, will have charge of her machinery. The new FAVORITE is probably one of the staunchest vessels ever built on the lakes and as part of her work may include ice breaking, she has been reinforced extra strong. Her shell plating is of double thickness, being of ⅜-inch steel plates while reinforcing frames are spaced every 10 inches. She is an all-steel flush-deck vessel 173 feet long, 40 feet beam, 16 feet molded depth and her draft in ordinary trim is 7 feet 6 inches forward, 12 feet 6 inches aft. By the aid of water ballast she can be trimmed to an event draft of 9 feet 6 inches.

Her equipment is complete in every respect and embodies the essential features of the old vessel with many improvements. Her engine is of the fore and aft compound type with cylinders 25 and 50 inches bore by 36-inch stroke. Her condenser pump is independent. Her boilers, three in number, are placed fore and aft and were designed by the Great Lakes Towing Co. They are marine-type return-tubular boilers with independent steam drums. The boilers are 12 feet 3 inches long by 84-inch diameter, each containing 154 3½-inch tubes. Each boiler has two 48-inch corrugated furnaces. A distinctive feature of the installation is that each boiler has an independent stack, all three stacks running up through a single 8-foot funnel. This arrangement gives each boiler the advantage of an independent draft while the free space inside the funnel assures better ventilation of the fire room. Just aft of the engine room, in the 'tween decks, is located the machine and blacksmith shop. The machine shop equipment consists of a power bolt and pipe cutting machine, which will accommodate pipe up to 4 inches and bolts up to 2½ inches; 18-inch engine lathe, with 8-foot bed; 24-inch crank shaper, drill press, grinding wheel stand, power hack saw and circular saw mill for cutting up lumber. The machine shop also accommodates the lighting plant which is divided into four units. Each unit can be used separately as desired. Other equipment in this department includes a 2-stage air compressor and storage tank which furnishes air for operating pneumatic tools, and also for supplying divers; a portable arc welding machine and oxyacetylene



FAVORITE COMPLETELY OUTFITTED AND READY TO GO IN COMMISSION



OUTBOARD PROFILE OF THE GREAT LAKES TOWING CO.'S NEW WRECKER FAVORITE, BUILT TO REPLACE VESSEL OF THE SAME NAME NOW STATIONED IN FOREIGN WATERS

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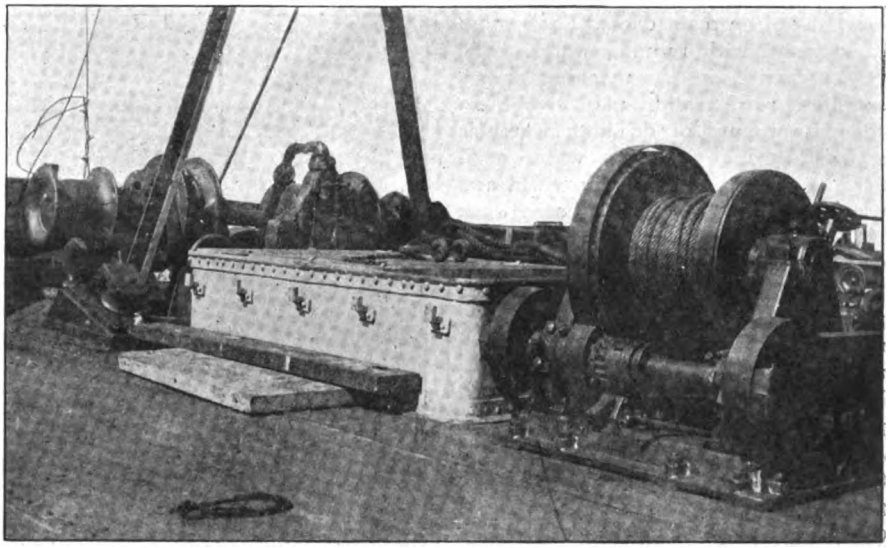
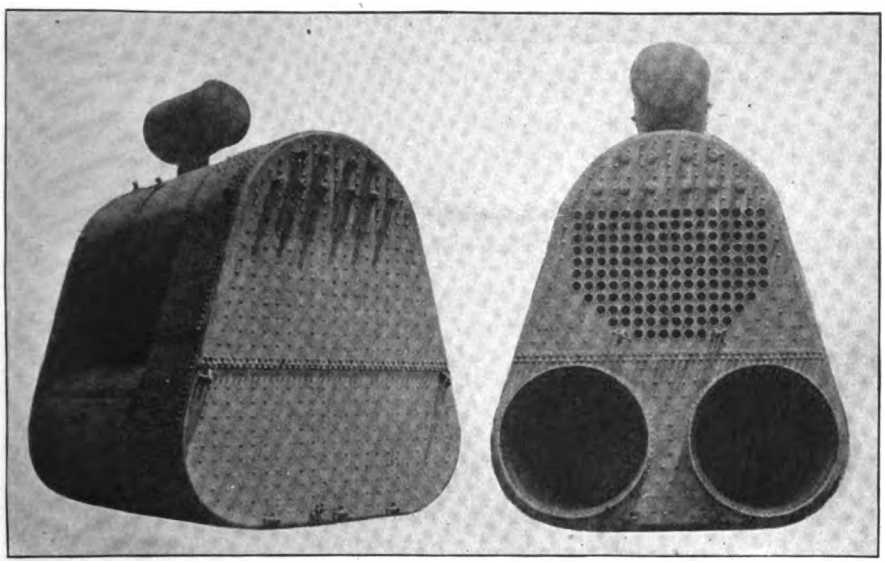
tanks and burners for various purposes.

Her deck equipment was especially designed to meet the exacting requirements of a craft of this kind. Located above the pilot house is a 35-ton locomotive-type crane, without trucks. This crane has ample power for handling a 3-ton ore bucket, and has about double the capacity of that on the old steamer. This feature is of especial importance in lightering stranded craft which are loaded with ore. A separate dynamo furnishes light for the crane and boom for night work. As this crane serves the whole forward deck, it can be utilized for a diversity of wrecking operations.

The FAVORITE carries two patent anchors weighing 4000 pounds each which are controlled by a steam windlass on the forward deck. Two thousand feet of 1¾-inch stud anchor chain are provided. Aft of the windlass is located two steam mooring engines equipped with wire mooring lines.



FORWARD DECK SHOWING WINDLASS AND ONE OF THE MOORING MACHINES BOTH OF WHICH ARE OPERATED BY STEAM



FRONT AND REAR VIEWS OF THE RETURN TUBULAR MARINE-TYPE BOILERS INSTALLED IN THE FAVORITE

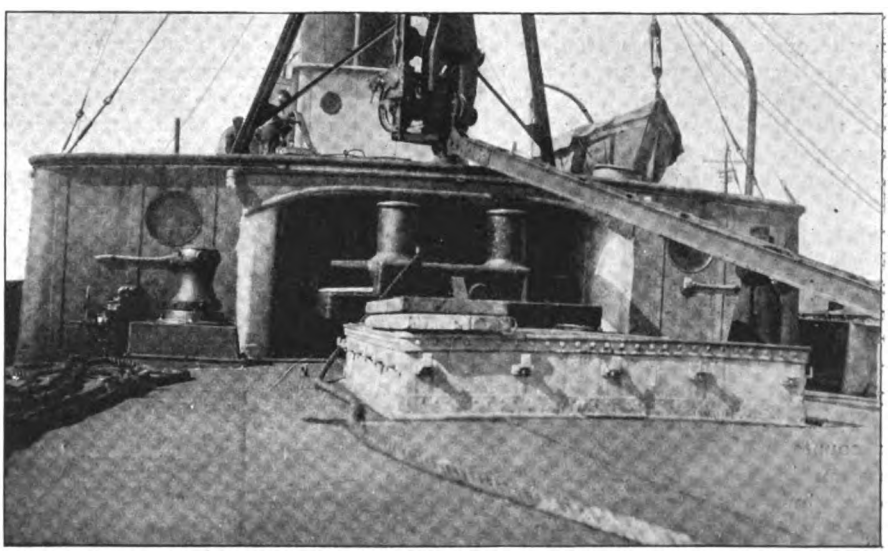
On the after deck is located a steam capstan, towing machine and a stiff-legged type 5-ton crane. This crane serves the after deck as well as the machine shop, which is provided with a liberal sized hatch for handling material. This crane also serves the life boat located on the top of the deck house. The towing engine is designed to meet the requirements of a vessel of this type and is equipped with 1200 feet of 2-inch wire cable. The towing bitts are located near the towing engine and are made in the form of a solid steel casting.

The steering apparatus is of the steam-hydraulic direct-acting type and was designed by the Great Lakes Towing Co. It is the type of steerer used on all the company's tow boats. It is located near the after-peak bulkhead, under the main deck. The tiller is a steel forging and swings just above deck, being connected to the steering apparatus by means of tiller chains and compensating springs. The cylinders on the steerer are 6 x 16 inches in diameter with 6-foot stroke.

The wrecking equipment is complete in every respect and was selected from experience gained through many years of practical wrecking operations. Steam pumps ranging in size from 4 to 16-inch suction form an important part of this outfit. This pump equipment includes all necessary fittings.

Other wrecking equipment includes 30 hydraulic jacks of 100-ton capacity, each with hutchicks and all necessary fittings; two portable air compressors, three diving outfits and a complete submarine electric light outfit. The vessel also carries a full assortment of ship chandler's stores.

Living quarters for the crew are



AFTER DECK SHOWING LARGE TOWING BITTS FORWARD OF WHICH IS THE TOWING MACHINE—STEAM CAPSTAN IS ON THE PORT SIDE

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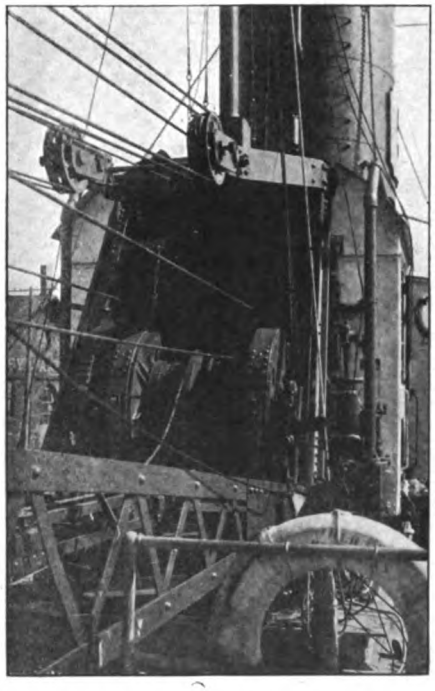
located on the main deck. Each room is equipped with running water. The vessel carries an ice machine and a complete refrigeration plant while an adequate supply of drinking water is assured through a power water purifier. A wireless outfit is provided and when the vessel is at her home dock she is equipped with long distance telephone.

In many respects, the new vessel is patterned after the original one, but many important changes have been made. The old vessel was 195 feet long, or 22 feet longer than the present craft. The new FAVORITE also is built on finer lines. The locomotive-type crane on the forward deck has greater capacity than the one carried on the older vessel. The old FAVORITE was fitted with a triple expansion engine. She carried two Scotch boilers.

When the original FAVORITE was built at Buffalo in 1907, she was 195 feet long, but in 1915 she was lengthened to 215 feet. In the new vessel some of the original equipment of the first vessel has been abandoned. This includes among other items a power launch and a power punch and shear. The performance of the new craft is looked forward to with interest by Great Lakes' vessel operators.



CRANE ADAPTED FOR WRECKING OPERATIONS

Heyday of Lake Windjammers

(*Concluded from page 235*)

flats. In the next 15 years nearly all the finest and largest sailing vessels that ever sailed the lakes came out. After the year 1883 not one large sailing vessel was built on the Great Lakes, fully fitted out as such. After 1885 sailing vessels disappeared or were converted into barges with much reduced sail area, to be towed by a steam barge."

A fleet of powerful tugs put the sailing vessels quickly and safely through the rivers. A friend writing me from Detroit said: "I haven't been able to get any pictures of the schooners as the hair-trigger cameras were not in vogue in those days, but I assure you it used to be a fine sight to see the old river tugs going up and down with a tow of from five to eight schooners with all rags set if the wind was fair."

New Developments in Ship Operation

THE difficulties of steamship management and operation have been frequently spoken of with the positive declaration that Americans have been slow to learn the business. In general, these statements refer to a business which is creating an interest among citizens of every walk of life of the United States, without giving any specific instances. There is the one small item of bookkeeping which in the office of a steamship company presents problems which are never encountered in the offices of an industrial concern. In his lecture before the New York society of accountants, J. J. LeBleu of the Holland-American line listed among the books of a steamship accountant the following:

The statistical loading book, the voyage account book, the engagement book, the book of passengers booked for transportation, the book of through shipments, the book showing the total passage received for a certain trip and the book of prepaid passage of passengers.

These are but few of the separate accounts which must be kept in a steamship office. There are many other by-product books with which a bookkeeper should have familiarity. The practice of writing insurance on vessels and cargoes in many insurance markets of the world tends to complicate the accounts. Furthermore there is the little item of cash receipts and expenditures which presents no small problem. We in America pay largely in bank checks, but that is not the case in all countries. In Holland and some other countries payments are made by the transfer of cash.

Involves Much Detail

It is necessary to have a familiarity with international exchange rates. The fluctuations in the value of foreign currencies is ever a perplexing matter. There is one export house which has adopted the practice of purchasing foreign money when entering into a contract in that country and holding it on deposit in some safe bank in that country. Should the rate of exchange go against the house by the date of payment, it has been protected. This is nothing more than a hedge as commonly accepted in the markets and is a practice which commends itself for its stability if for no other reason.

Marine Insurance

Before the war, it was a practice of German insurance companies to reinsure the risks of insurance companies all over the world, and from this reinsurance they made enormous profits. At that time the United States had but few marine insurance companies and the fire insurance business was largely in British hands. The war having developed an American mercantile marine, American marine insurance developed considerably. The opportunities afforded the American fire and marine insurance companies to enlarge their fields of operation and to engage in a reciprocal reinsurance with foreign countries can now be considered.

One opportunity has recently been called to mind by Consul General Halstead, reporting from Stockholm The Swedish law limits the amount of insurance that a Swedish insurance company may keep on its own account on a single risk to 6 to 10 per cent of its capital and reserve fund. Thus a large Swedish insurance company may issue a policy of, say, 1,000,000 crowns ($268,000) and distribute nine-tenths or more of the risk among other companies. It appears that this distribution of risks is done through brokers or through companies especially established for that purpose. Before the war such reinsurance went very largely to German companies, but the British and French also participated. In order to handle this reinsurance business the Aktiebolaget Reassurance has been formed in Stockholm for the distri-

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bution of Swedish risks abroad and of foreign risks in Sweden. It is a firm that is really a broker. The capital concerned is small, but the firm seems to be of good standing, its directors being men of position. Opportunities of this kind open a new field that in all probability will be investigated by American insurance companies.

Condensed Reviews of Latest Books

The Strength of Ships, by J. Bertram Thomas; cloth; 290 pages, 4 x 7 inches; published by Scott Greenwood & Son and furnished by THE MARINE REVIEW for $3.

The author of this book is an Englishman and has lectured for many years on naval construction and also has devoted a large amount of time to the private teaching of individual students. The work is complete and is divided into 26 chapters as follows: Materials of construction and their properties; shearing forces and bending moments; methods of integration; resistance of beams to flexure; deflection of beams; fixed and continuous beams; rectangular plates under water pressure; shear stresses in beams; strength of struts; longitudinal strength of ships; tranverse strength of ships; riveted joints in ship work; effect of rolling and pitching on the upper structures; rudder calculations; strength of shaft brackets, and gun supports.

Many tables for ready reference are also included. These comprise exponential and hyperbolic functions, hyperbolic logarithms of numbers from 1 to 50; logarithms, antilogarithms, trigonometrical functions; tables of squares, cubes, square root and cube root; areas and circumferences of circles up to 6-inch diameter advancing by thirty-seconds and sixteenths; areas of circles advancing by tenths of an inch; metric equivalents; equivalent values of millimeters and inches, and kilograms in pounds.

The book is well illustrated and each problem taken up is explained thoroughly for which purpose many tables and equations are included in the text. Not only students but naval architects as well will find this book a ready means of reference for solving the thousand-and-one problems pertaining to shipbuilding which are impossible to commit to memory.

The Merchant Marine Manual, by Capt. Eugene E. O'Donnell; cloth; 254 pages, 4 x 6 inches; published by The Yachtsman's Guide and furnished by THE MARINE REVIEW for $1.

The author points out that the manual was originally prepared for the guidance and instruction of apprentices on the training ships of the United States shipping board and that the need of a compact manual was felt by many students who, being born inland, where wholly ignorant of ships and the sea. It is also pointed out that the book in question was especially prepared for the intensive training of men before placing them in the merchant service.

The book is divided into 22 parts as follows: Safety of life at sea, seamanship, sailing vessels, steam vessels, design and construction of steel merchant vessels, stowage of cargo, load line marks, station bill, duties of coal passers, firemen, water-tenders and oilers; marine boilers and accessories; the use of oil for fuel on steam vessels, boiler room auxiliaries, marine engines for the merchant service, internal combustion marine engines, care and supervision, buoyage—aids to navigation, signals used by mariners, help in case of accidents, requirements for licensing of deck officers, requirements for licensing of engineers, nautical dictionary and questions and answers.

The book is well written and contains numerous illustrations. Each department is complete in itself and is so arranged that references are easily found. The nautical dictionary and list of questions and answers are especially valuable to apprentice seamen as means are thereby afforded for gaining authentic knowledge on many questions that prove confusing to the man who is unfamiliar with the sea and deep-water vessels.

A Practical Course in Wooden Boat and Ship Building, by Richard M. Van Gaasbeek; cloth; 204 pages, 4½ x 7½ inches; published by Frederick J. Drake & Co. and furnished by THE MARINE REVIEW for $1.50.

The author is head of the department of woodworking, school of science and technology, Pratt institute, Brooklyn, N. Y., and it is pointed out that the book was especially written for carpenters and other woodworkers who desire to engage in boat or shipbuilding, and as a text book for schools.

The volume is an outgrowth and development of a pioneer course organized early in the war by Pratt institute in response to the demand caused by shortage of skilled labor in the shipbuilding industry.

The book should prove a valuable aid to men who wish to qualify as expert handicraftsmen in the shipbuilding trades as every point in the construction of a wooden vessel is clearly explained, step by step. Written from a practical point of view, the book is wholly devoid of involved phraseology that would serve to confuse the reader. Many illustrations are included. Some of these are from photographs taken under actual working conditions, while others are reproductions of drawings.

Ten chapters are included as follows: The mold loft, stem and stern construction, futtocks and frames, outside planking, ship construction, machines and labor saving devices, raising the frames, planking and finishing, hand tools and wooden boat and ship terminology.

The Blue Book of Facts, edited by E. K. Glass; cloth; 116 pages, 3½ x 6 inches; published by the Ocean Publishing Co. and furnished by THE MARINE REVIEW for $2.50.

This book, now in its third edition, contains questions and answers generally asked applicants for marine steam and gas coal license. Many new questions and problems are included that pertain to all grades of license. A feature of this edition is that the questions and answers are keyed so that the applicant need only study those that pertain to the examination he expects to take.

The subjects included are boiler, engine and gas engine questions and answers, to which are added several pages of concise mathematical information. Several problems, the nature of which every engineer should be familiar with, are also included. The questions are all practical.

The book will prove of value to marine engineers in general as it contains much information that is difficult to carry in mind for any length of time.

A 94-foot tug, the NATHANIEL P. DOANE, has been launched by the Adams Shipbuilding Co., East Boothbay, Me., for Crowell & Thurlow, Boston.

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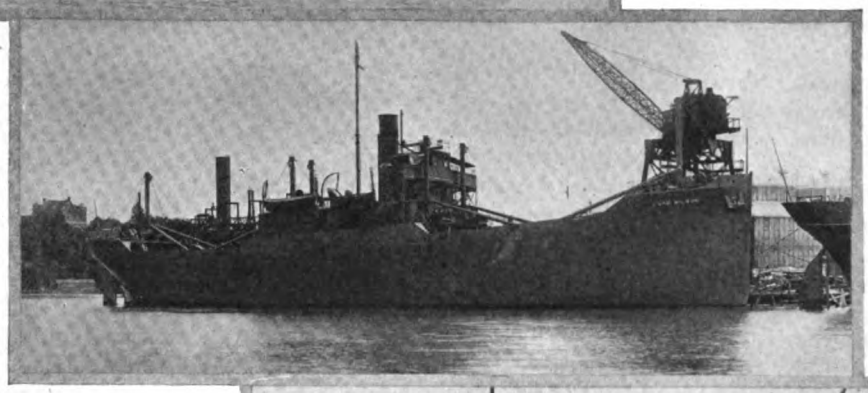
Latest Marine News in Pictures

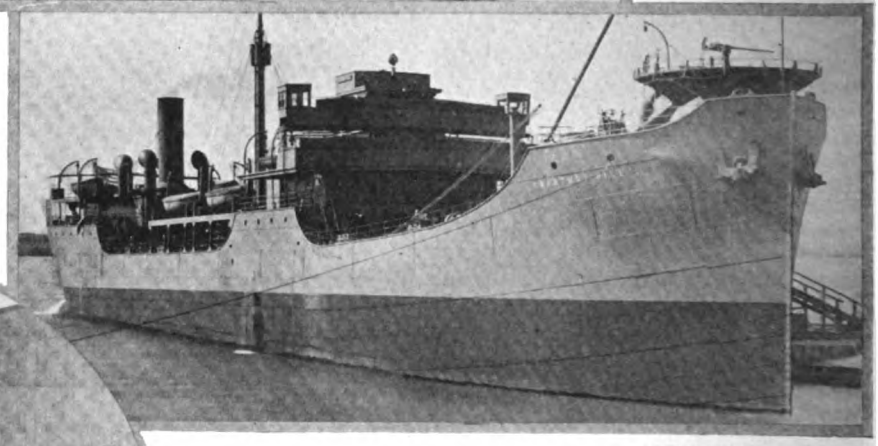
Here are three of the latest vessels for the American merchant marine. These ships embody the most modern improvements in naval architecture and special attention has been given in fitting out to make them desirable berths from the seaman's point of view.

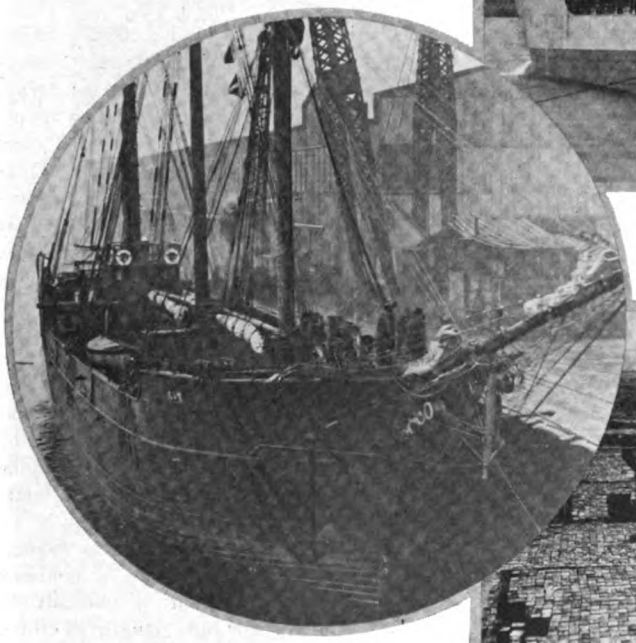
Above is a recent product of the New York Shipbuilding Co. Lake Wilson, at the right, is a lake-built vessel.



Chestnut Hill, 7000-ton tanker, shown below, was built by Pusey & Jones, Wilmington, Del.

These vessels, products of American yards, have recently left the fitting out docks and soon will be engaged in overseas service.





Kashima Maru, Japanese schooner, among first of trading ships to arrive at Seattle after ending of hostilities

Cargo of peanut oil unloaded at Seattle from Japanese ship

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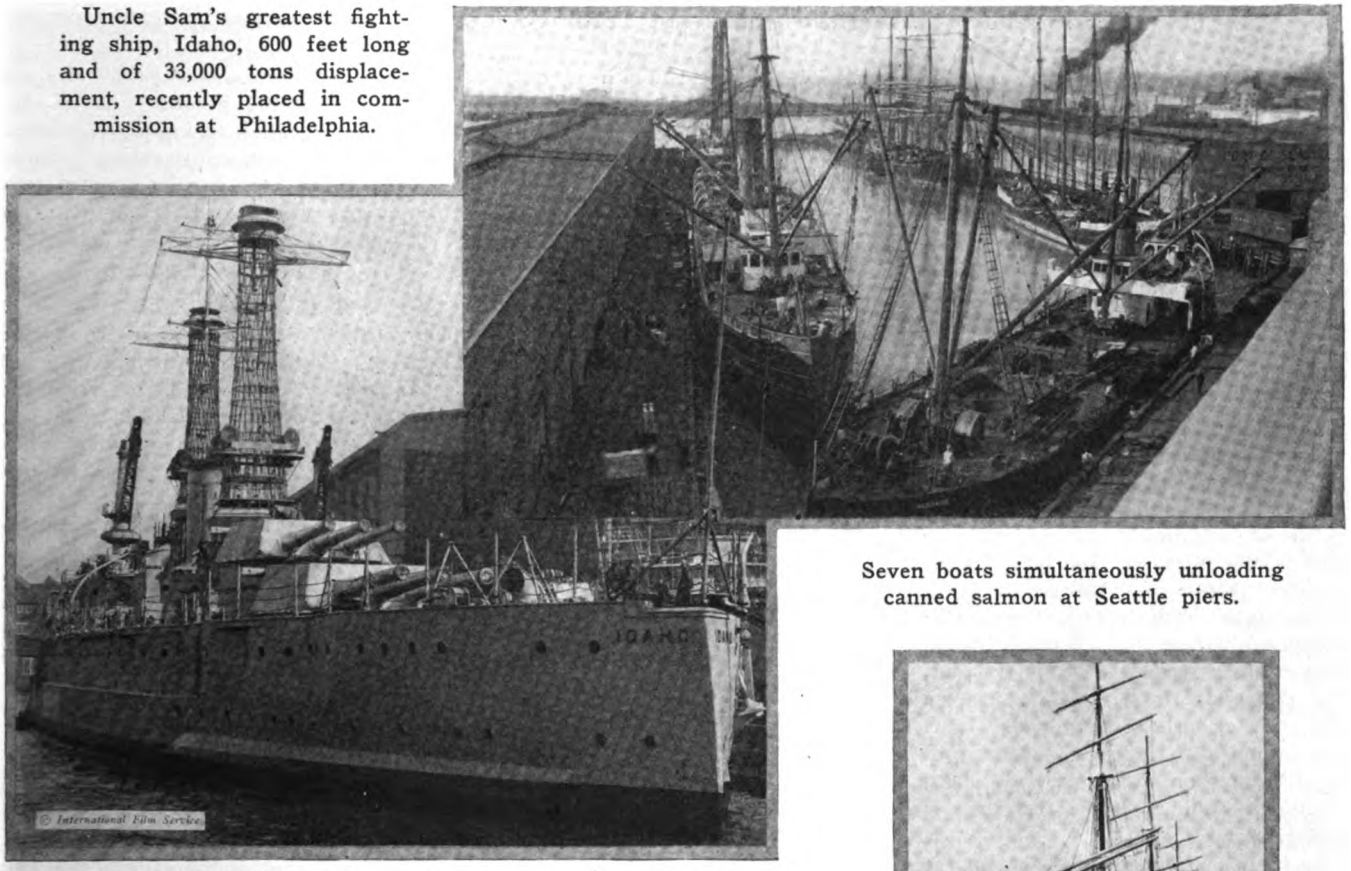
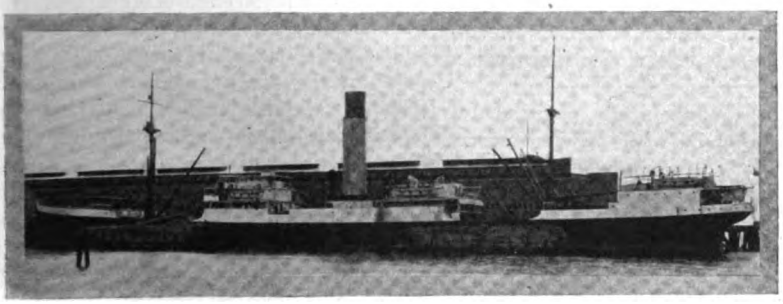
Photographs From Far and Near

Uncle Sam's greatest fighting ship, Idaho, 600 feet long and of 33,000 tons displacement, recently placed in commission at Philadelphia.



Seven boats simultaneously unloading canned salmon at Seattle piers.

Eurypulus, recently arrived at Seattle from England.



Another glimpse of Hog island; twelve boats fitting out.

Avon, lost at sea with all hands.

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Foreign Ports Rush Improvements

On Anticipation of Heavy Traffic, Foreign Harbors Are Being Made Ready to Handle Increased Tonnage and Larger Vessels

COPENHAGEN harbor has been extended during the last 50 years to keep pace with the increase in trade. The depth of water has been increased from 20 to 31 feet, and the length of quay from 7 to over 17 miles, exclusive of an additional 3 1/3 miles of canal quay. The total length of quay open to traffic is therefore nearly three times greater than 50 years ago. A corresponding increase has been made in the harbor area and the sites adjoining the quays. An additional 2½ miles of quay has been added during the war and 163 acres of adjoining land has been reclaimed. The total width of the harbor from east to west is 5¼ miles, and the length from north to south is 8 miles.

The free harbor and the Kalkbraenderi harbor have been extended during the war, a new jetty built and the quay walls on the eastern side of the harbor completed. It is also intended to increase the area of the free harbor to a total of 128½ acres by adding 7½ acres to the northern end.

A dam has been built across the southern extremity of the harbor between Copenhagen and Amager island which excludes the effect of the currents in the sound and greatly adds to the security of the harbor. The dam is about 1½ miles long and incloses an area of over 700 acres, which is being gradually reclaimed and formed into harbor basins with quay walls, and building sites for warehouses and factories.

The greater part of the local steamship traffic starts from the Kyaesthus quay, which is to be extended, provided with warehouses, electric cranes and up-to-date machinery for loading and unloading goods.

About 60 acres on the opposite side of the harbor are being reclaimed as an island to be used as sites for factories and warehouses round the Teglvaerks harbor. These new areas are to be connected by a concrete bridge resting on granite piers. A new 23-foot deep direct waterway is being built to the Teglvaerks harbor.

Steps are being taken to dredge a deep channel from Kiöge bay through the shallow Kallebo strand to the inlet dock of the dam which closes the southern entrance to the harbor. The greatest depth is only 11 feet, and a channel 5 miles long is to be dredged. The work will be done in two stages, first to a depth of 18 feet, and, finally, to a depth of 25 feet. A new lock, capable of taking large ocean-going vessels, will be built about half a mile south of the dam, in order to interfere as little as possible with the traffic across the dam.

The question of deepening the Drogden channel between the two islands of Amager and Salthom is being seriously considered, as it would provide a short and convenient inlet to the southern harbor and make it possible to provide almost unlimited harbor extensions on the southern side of the harbor dam. (*Ingeniören.*)

* * *

The railway system serving the port of Rotterdam has been extended. The first station in Rotterdam was built on the right bank of the river Meuse at the junction of the Rotterdam-Goudra-Utrecht and the Amsterdam-Utrecht-Arnhem lines. The quay accommodation eventually became insufficient, and the docks had to be extended to the left side of the Meuse. This again in due course proved to be inadequate, and extensive alterations were put in hand which were completed in 1917.

The port is now in a position to deal expeditiously with all commerce which is likely to come to it in the future, instead of merchandise being badly delayed there, as frequently occurred through the congested state of the docks.

* * *

Attention is again being directed to the claims of Falmouth, England, to become an important center of liner traffic, through the regular use of this port during the war. A bill for the construction of deep water wharves and jetties in this harbor will likely be introduced at the present session of parliament.

The proposed works will call for deep water wharves comprising a total length of 4350 feet, with a branch line of standard railway, 22½ miles long, to connect with the main line and to serve the district in which mining for clay is in progress. Falmouth harbor possesses great natural facilities and is a distributing and collecting center for the china clay fields. The output of the china clay industry had in 1914 increased 1,000,000 tons a year and at the present time is demanding greater shipping facilities. With the harbor construction scheme goes a number of smaller construction enterprises which will strengthen this city as a port.

* * *

In Sumatra, harbor sheds formerly constructed of corrugated iron have during the war been built of reinforced concrete. These buildings have the advantage of being cooler and less likely to be infested with rats. They are easily cleaned with water from a hydrant, offer resistance to burglars, are more durable, and of neat appearance when properly designed.

These buildings have the disadvantage of being heavier and therefore require more expensive foundations where the ground is bad, they are not portable; and the concrete may crack and become leaky.

* * *

J. Renaud states that the draft of vessels is constantly increasing and it is necessary to foresee future requirements. In the Mediterranean the port of Marseilles can be put in a condition to receive the largest vessels, but this port is quite an exception. After Marseilles the most favorably situated port on the south coast of France is that of Villefranche, which may be considered as an annex to that of Nice. With relatively small expenditure, Villefranche could be made suitable for the largest vessels. In Algeria improvements at Oran and Algiers would meet all requirements, and in Tunis, the port of Bizerta could be made suitable by dredging the approach channel. These three ports should have the same depth of water as the Suez canal at Port Said.

A suitable harbor might also be made in the gulf of Gabès or at the entrance of Bou-Grara or in the bay of Surkenis. Djibouti is well placed at the entrance of the Indian ocean, and in Madagascar the ports of Tamatave, Majunga and Antsirane are naturally deep enough.

In Indo-China there are Cape Saint-Jacques at the entrance of the Saigon river, Tourane, and the bays of Cam-Ranh and Bing-Loï. In the Pacific, Nouméa possesses a fine natural harbor; the island of Tahiti is direct on the route from Panama to Australia, but the harbor of Papeete cannot

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easily be made deep enough. It is therefore desirable to find another more suitable. In the Antilles the port of Fort de France lies on the route to Panama, and improvements are now in hand. On the west coast of Africa the ports of Dakar, Libreville and Port-Gentil can already receive very large vessels.—(*Comptes Rendus.*)

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A German writer in *Hansa* discusses the question of the value or otherwise of ferroconcrete ships. This subject does not seem to have been dealt with in Germany to the extent it has in other countries. This is partly explained by the fact that Germany had already experimented some time since with the new type of vessel, but owing to shortage of labor and material not much progress has been made during the war. Further, the need for tonnage was not so urgently felt in Germany. Up to now shipping circles in that country have shown a certain reserve in regard to concrete ships.

The new type of vessel is heavier than a steel-built ship of equal carrying capacity, so that even if the concrete ship is easier and cheaper to build the charges for maintenance and propulsion are higher than is usual. It is thus concluded that, cheapness of building, etc., considered, the working costs with concrete ships are higher, and not lower, than with steel vessels. Conditions are a little different in regard to motor-propelled ships, where the total weight of the ship may be less than in the case of a steel vessel, owing to the comparatively low weight of the engines, etc., and of the fuel carried.

At present the concrete ship must be considered purely as a war product which can only attain to the stage of real usefulness after further development. Some doubt is expressed as to the extension of ferroconcrete construction on a large scale to ocean going vessels. For medium-sized coasting vessels and for short voyages in protected waters the ferroconcrete ship should prove useful. In Germany's case, these ships could with great advantage be used for her Baltic trade and for navigating fjords. The encouraging results obtained in other countries are evidently stimulating German enterprise. In Berlin and Stettin concrete shipyards are in course of construction; a new company with a capital of 1,000,000 marks has been floated in Hamburg to work the Rüdiger system. A diesel engined cargo-vessel has already been put in hand for the Baltic trade. There is just now a great shortage of tonnage in the Baltic trade, and, in view of trade prospects in Finland and at the Baltic ports, German yards plan to make every effort to overtake foreign competing yards in the building of large concrete cargo boats. This competition may be expected to be severe in the Scandinavian countries, in which several yards are already working or in course of construction.

* * *

Possibilities for concrete shipbuilding in India have been under discussion recently. In order to build steel ship hulls, the steel plates must be imported as the plate mills in that country, now under construction, will not be completed for some time. On the other hand, steel rods needed for reinforced concrete construction are made in India while all the shipyard machinery such as crushers, mixers, screens and hoists can be obtained there. The variety of trades involved in building reinforced concrete ships is less than in steel ships and a comparatively small amount of skilled labor, which is scarce in India, will suffice. Climatic conditions are such that work could be carried on throughout the whole year. It is suggested that the first ships constructed in India be used for home coastal trade.

* * *

The fleet of oiltank ships flying the houseflag of the Eagle Oil Transport Co. of London, has been increased from time to time by ships built by Swan, Hunter & Wigham Richardson, Ltd., either at their Wallsend shipyard, Wallsend-on-Tyne or at their Neptune works, Walker. The SAN FLORENTINO was recently launched at Wallsend for the same owner.

Their vessel is one of the largest oiltank ships in the world. Her main dimensions are: 546 feet overall length, 68 feet 7 inches beam, with a molded depth of 42¼ feet. Her deadweight capacity is 18,000 tons. She is built on the Isherwood system of longitudinal framing. The hull is divided into 13 oiltight compartments, which are subdivided by a central longitudinal oiltight bulkhead. The range of these oil holds is further divided transversely by three cofferdams and two pump rooms, all of which extend from side to side of the ship. There are four duplex pumps capable of discharging 300 tons of oil an hour. These are connected to a complete system of pipes to discharge the ship by grouping together a given number of oil holds in various combinations. Four different grades of oil can be either loaded or discharged at the same time without mixing. An idea of the completeness of the oil piping may be gathered from the fact that about 4½ miles of pipes have been fitted in the SAN FLORENTINO. Amidships are cabins for the captain, officers and a few passengers. The engineroom officers, the crew and firemen are accommodated in a deckhouse in the after part of the ship.

The propelling engines and boilers are in the after end of the ship and were built by the Wallsend Slipway & Engineering Co., Ltd. The engines consist of a set of compound geared turbines of the Brown-Curtis type, working a single propeller and designed to drive the ship, fully laden, at 11 knots an hour.

* * *

The increased need, due to political changes, for an extension of the inland waterways of Germany gives additional interest to the scheme for connecting the Rhine with the Danube by a ship canal.

The Regensburg chamber of commerce some time ago petitioned the governing authorities so far to modify the scheme as to make the proposed canal run not from Nurnberg by way of Steppenberg, as provided for by the plan, but by way of Amberg, to connect with the Danube at Regensburg, where capacious wharves already exist.

The route by Amberg would be 87 kilometers shorter and, notwithstanding a greater length of tunneling, considerably cheaper in construction than the Steppenberg route. As the result of surveys made to ascertain the conditions to be encountered along the deviation course, the choice appears to have fallen on an intermediate route which necessitates a tunnel only 8 kilometers long.

If the changed political situation which the conditions of peace have brought about do not raise obstacles to this scheme, the work of carrying it out is likely to be pushed on vigorously in the near future.

* * *

The east Swiss section of the Association Suisse pour la Navigation du Rhône au Rhin has published its first annual report for 1917. The activities of the association have led to its obtaining considerable recognition both at home and abroad. The great support that the association has also received, financially and otherwise, from official bodies, industrial firms, etc., shows the interest that is being evinced in the scheme of providing a navigable connection from Marseilles and the Rhône to Lake Geneva, and thence to the Aare in the region of the Rhine, Limmat and Reuss. This east Swiss branch has already done a considerable amount of propaganda work in the cantons which it serves, in the way of lectures, scientific studies, and essays in the Swiss press.

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Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

S. B. STOCKING has been appointed assistant general freight agent of the Admiral line at Seattle. Although still a young man, he is one of the oldest employes, in point of service, of the Alexander interests. Graduating from Williams college, Williamstown, Mass., in 1907, Mr. Stocking came to the Pacific coast in October of the same year, and almost immediately entered the employ in Tacoma of the Alaska Pacific Steamship Co., control of which had just been taken over by Tacoma capital, headed by H. F. Alexander as president. In the spring of 1908, Mr. Stocking was transferred to the Seattle offices of the company, and held successively positions of chief clerk, city ticket agent, wharf agent and contracting freight agent. In February, 1915, he was transferred to Tacoma as agent for the Pacific Alaska Navigation Co., which had succeeded the Alaska Pacific Steamship Co. and the Alaska Coast Co. When the Pacific Steamship Co. was formed in 1916, Mr. Stocking became agent for that company at Vancouver in November of the same year. At the close of the year 1917 he was brought back to Seattle as chief clerk to A. F. Haines, general manager, which position he filled up to the time of his present appointment.

* * *

JOHN F. CAMPBELL has been given charge of the Seattle district offices of the new division of cancellation adjustment and salvage of the Emergency Fleet corporation. The division was created by the corporation last December. It passes on ship contracts that can be canceled at the least expense, adjusts the claims of contractors and supervises the disposal of the materials and properties owned by the corporation.

* * *

E. F. L. STURDEE has been appointed general agent of the passenger department of the Canadian Pacific railway and steamship lines in Seattle. He has been general agent of the passenger department of the Canadian Pacific Railway Co. and Canadian Pacific Ocean Services, Ltd., Boston, for the past four years.

* * *

CAPT W. A. MAGEE has succeeded CAPT JOHN F. BLAIN, who retired April 1 from his position as Northern Pacific district manager of the Emergency Fleet corporation. Captain Magee has had a successful career as a navigator and shipbuilder. He joined the Emergency Fleet corporation in May, 1917, as chief inspector for the Northern Pacific district under Captain Blain. He rose rapidly in the corporation's service. Last September he was appointed assistant in charge of wood ship construction in Washington and in December he was elevated to the office of assistant district manager.

S. B. STOCKING

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LESTER SISLER, secretary of the United States shipping board, has resigned. For the present, JAMES V. CONVERSE, assistant secretary of the shipping board is looking after the duties of secretary.

* * *

ALFRED W. PLEASANTS has been appointed manager at Baltimore for the Atlantic Transport Co. He has been connected with the company for the past 27 years and succeeds JAMES C. GORMAN, who died recently.

* * *

VICTOR W. SMITH, who has been directing the affairs of the Anglo-Oriental Shipping Co., is now connected with the Kerr Steamship Co.

* * *

ANDREW H. ALLEN has been appointed freight manager for Great Britain and the continent for the Canadian Pacific Ocean Services, Ltd., to succeed H. S. CARMICHAEL. Mr. Allen's offices are in the Royal Liver building, Liverpool. A. P. VILLAIN has been appointed city ticket agent for the company at San Francisco and HERBERT CATJE has been appointed traveling passenger agent for the company with headquarters at San Francisco. The company has also appointed GUY D. ROBINSON European freight agent with headquarters at Montreal, Que.

* * *

J. J. DAVIS has been appointed agent of the shipping board at Galveston, Tex. Owing to increased business on the gulf, the shipping board, at the time of Mr. Davis' appointment, appointed six other agents as follows: W. H. RICHARDSON, Port Arthur, Tex.; C. A. PATTERSON, Gulfport, Miss.; G. J. SANTA CRUZ, Mobile, Ala.; LEE MCDONALD, Pensacola, Fla.; PHILLIP SHORE, Tampa, Fla., and W. R. PORTER, Key West, Fla.

* * *

GEORGE F. MORGAN has been elected president of the Anchor Shipbuilding Co., Washburn, Wis. He fills the position left vacant by W. NICOLAYSEN, who has resigned all connection with the company. P. W. TRIMBORN, Milwaukee, has been elected treasurer, taking the place of P. K. EVERSON, who has resigned. Other recently appointed officers of the company are: WILLIAM GUNN SMITH, general manager and director; ROBERT CURR, general superintendent, and JOHN L. LARSEN, purchasing agent.

* * *

JAMES P. MARSH, who 54 years ago founded the business of Jas. P. Marsh & Co., Chicago, manufacturer of steam gages, recently retired from active business. ORVILLE W. THOMPSON has been elected president of the company and ROBERT A. CAMPBELL secretary. Mr. Thompson and Mr. Campbell have been identified with the company for the past 16 years and will continue plans for business expansion.

* * *

H. W. BUKER has been placed in charge of the St. Louis branch of the Chicago Pneumatic Tool Co., Chicago, as district manager of sales. He succeeds J. D. CORBY who recently resigned.

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Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

C. W. JOHNSON has been appointed assistant manager of works of the Westinghouse Electric & Mfg. Co., East Pittsburg, Pa. After graduating from the Ohio State University, he entered the employ of the Steel Motor Co., Johnstown, Pa. A year later he became associated with the Bullock Electric Co., Cincinnati. In 1904 he was made superintendent of Allis Chalmers Bullock, Ltd., Montreal, Que. In 1907 he entered the employ of the Westinghouse company as chief inspector of works, later being promoted to general superintendent, in which capacity he served until his recent appointment.

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F. L. ROBERTS has recently been appointed supervisor of purchases and distribution of the Chicago Ship Building Co., Chicago. S. G. TURNER, formerly with the United States shipping board, has been appointed purchasing agent for the company.

* * *

F. R. STILL, vice president and secretary of the American Blower Co., Detroit, has left for an extended business trip for the purpose of studying conditions pertaining to export problems. His itinerary will include Japan, China, Australia and many European countries.

* * *

ARTHUR B. SWEZEY, passenger department head of the Cunard line, New York, has been appointed manager of the San Francisco offices of the Cunard-Anchor and Anchor-Donaldson lines.

* * *

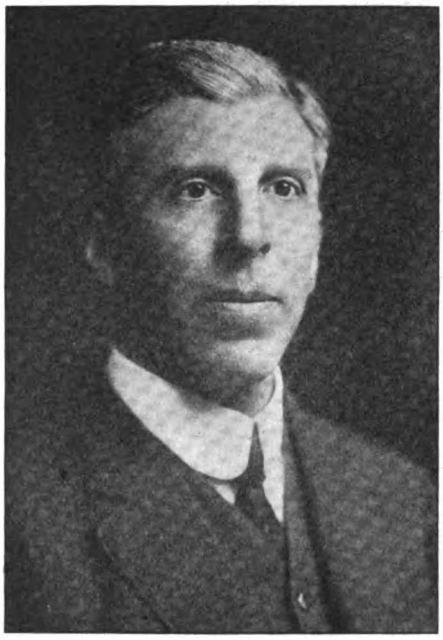
JOHN G. BRASH has been appointed office and sales manager of the Dauntless Shipyard, Inc., Essex, Conn. Previously Mr. Brash was purchasing agent for the Connecticut state council of defense.

* * *

VINCENT K. HULL has been made vice president and manager of the International Shipping Corp., New York. Formerly he was secretary and manager of the company. He also served on the United States shipping board and the shipping control committee.

* * *

RICHARD P. MOMSEN, member of the bar of Brazil, has resigned from the post of acting American consul general and has opened law offices in Rio Janeiro. His position in the consulate general during the period of commercial, economic and financial expansion between Brazil and the United States has given him a good opportunity of preparing himself for the reciprocal protection of American interests in Brazil and Brazilian interests in the United States. He intends to specialize in corporation, commercial, maritime and administrative law and has established an organization for registering patents and trade marks. Graduates of American technical universities will compose the technical staff for handling patent cases.



C. W. JOHNSON

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J. A. DOYER has taken charge of the San Francisco office of the Java-China-Japan line. Mr. Doyer formerly had charge of the line's Hongkong interests. During the last few years, the line's business out of San Francisco has increased by a large margin which necessitated the opening of a branch office to supersede the agency arrangement under which the line previously handled its San Francisco interests.

* * *

JOHN J. FORD, works accountant at the Fore River yards of the Bethlehem Shipbuilding Corp., Ltd., Quincy, Mass., has been transferred to Bethlehem, Pa., where he has taken up the duties of assistant comptroller of the corporation.

* * *

CAPT. JOHN F. BLAIN has resumed his prewar connection as Pacific coast agent of the Stewart Davit & Equipment Corp. Capt Blain's offices are in the Coleman building, Seattle.

* * *

ROBERT L. LAKE recently resigned his position as manager of purchases and traffic of the Virginia Shipbuilding Corp., Alexandria, Va., to return to his home in New York to look after personal enterprises.

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MATTHEW C. BUSH has been elected to fill a vacancy on the board of directors of the Missouri Pacific railroad. Mr. Bush is president of the American International Shipbuilding Corp.

* * *

CAPT. R. A. GILCHRIST, of Davis & Gilchrist, export freight contractor, New York, has returned from Bordeaux, France, where he supervised the discharging and loading of United States transports.

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HENRY W. B. ZUNDT, manager of the New York branch of the department of shipping information of the United States shipping board, has resigned to become associated with Haas & MacIntyre, marine insurance, New York.

* * *

LUCIEN H. PETERS, who has been a member of the freight traffic committee of the railroad administration for more than a year, has been appointed traffic control manager for the port of Boston and will have charge of the issuance of permits on all export freight shipped via the port. Mr. Peters for many years was foreign freight agent for the Boston & Albany railroad at Boston.

* * *

H. L. MULLIGAN, for some time Boston manager of the White Star line, has taken over management of the W. H. Eaves Steamship & Tourist agency, that city. Mr. Mulligan is now New England agent of the French line, the Royal Mail Steam Packet Co., the Red D line and is booking for the Ward line, also for lines operating to South America, Europe and the Far East.

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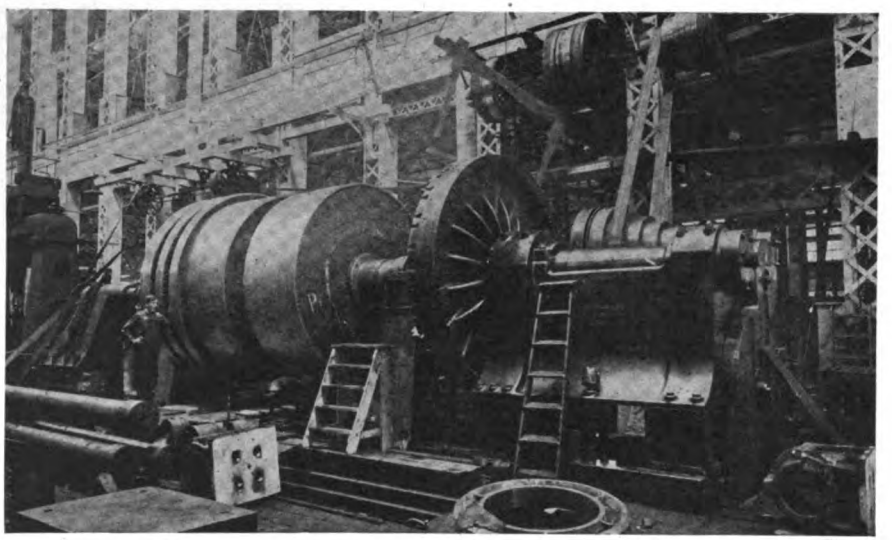
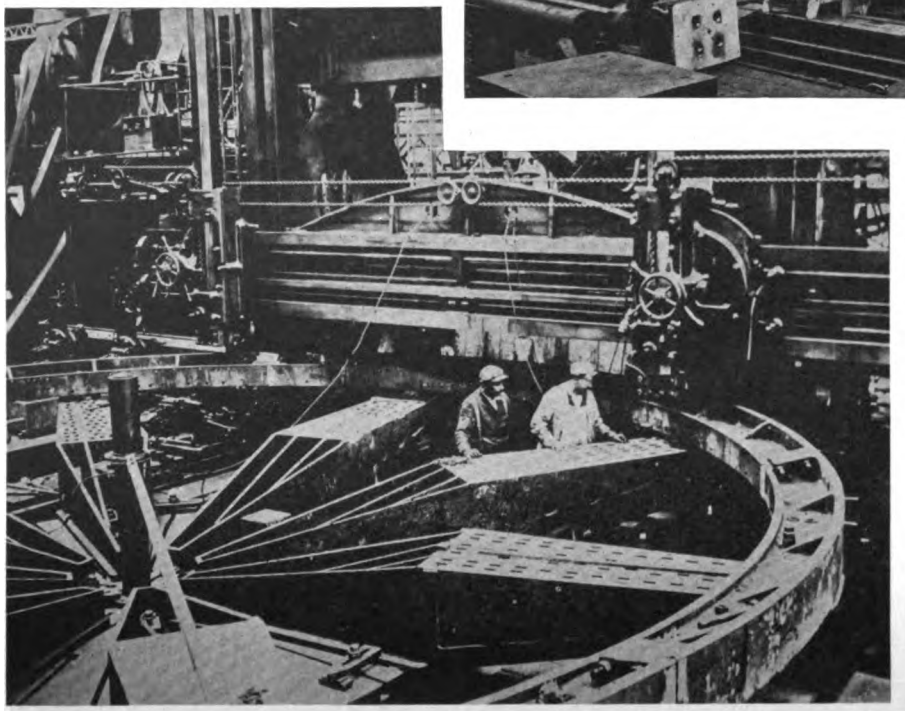
Massive Machine Tools Used on Marine Work

Those not engaged in the manufacture of marine equipment seldom realize the massive nature of some of the machine tools required. The accompanying illustrations, furnished by the Newport News Shipbuilding & Dry Dock Co., graphically illustrate the huge proportions of the machine shop equipment necessary in fabricating various units for Uncle Sam's fighting fleet. The upper illustration shows the operation of turning a rotor for the turbine engines of the battleship Mississippi. This unit is 132 inches in diameter. This lathe, however, has even greater capacity as it will swing a piece of 145 inches in diameter. The lower left illustration is a 16-30-foot convertible boring mill, the operation shown being work on a fixture for assembling girder work for turrets on the battleship Maryland. The piece is 28 feet in diameter and is made in sections bolted together. The lower right view is a wall planer, sometimes called a traverse planer. This tool is used on heavy, awkward work, the nature of which makes it impossible to mount for machining operations on ordinary tools. The piece being machined is a rudder frame for the battleship Maryland. This is said to be the largest wall planer ever built. It will accomodate work 25 feet square.





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Trial Trip of a Fabricated Boat

Eight Vessels Delivered by World's Largest Shipyard Make Satisfactory Trial Trips—All Are Oil-Fired and Operate Economically

EIGHT of the type-A cargo vessels built at the Hog Island shipyard have been placed in commission, and the ninth is practically ready. The performance of these vessels has brought forth considerable favorable comment. This type of boat is 7500 deadweight tons in size and they are being assigned for operation upon the tramp principle. In measuring the performance of the Hog Island boats, therefore, they should be compared with the ordinary tramp vessel of commerce. This yard is to build a second type of boat which is larger and which will be somewhat differently equipped, but it is not expected any of the latter type will be ready for use until next fall. In the meantime the 7500-ton boats will be turned out rapidly and just as speedily assigned to private shipping lines for operation.

The SAGAPORACK is considered typical of the first of the boats produced at the yard. According to the surveyors who looked her over, she is about as good a boat as could be expected from the class of labor which the yard is now able to obtain. The results of the tests made upon her trial trip therefore are considered to be a fair measure of the vessels which the Emergency Fleet corporation is obtaining.

Efficiency Tests Are Made

The dock trials of the SAGAPORACK were completed on March 19 while she was moored to pier B in the wet basin at Hog Island. The following morning she was taken out for her light trial. She left the dock at 7:44 with the aid of two tugs, headed down the Delaware river and started her speed test at 8:30 that morning. The minute the speed test was started tests of efficiency were made of all the auxiliary machinery, the steam from the general boilers being used for this purpose. Even the fire-hose was turned on and the decks flushed, the steam winches worked, etc. Each boat of the A-type built at Hog Island has 10 steam winches on its main deck for the working of the cargo derricks.

Upon the start a light air from north northeast arose. This was not sufficient, however, to affect the speed of the ship, although the tide was strongly in her favor. The weather was ideal in every respect throughout the trial. Upon her outward trip, the SAGAPORACK maintained a speed of 12.9 knots per hour. She was drawing not quite 13 feet of water. All of her tanks had been filled to give as much weight as possible but the displacement was extremely small. With a normal load, it is estimated, she will draw 24 feet of water.

The type-A boats, such as the SAGAPORACK, are 7500 tons deadweight and measure 401 feet in length. They are propelled by a Curtis steam turbine on a single screw. The turbine is 2500-horsepower. On the light trial trip the propeller was making approximately 94 revolutions per minute, which was sufficient to speed the vessel to near 13 knots. The requirements are for 11½ knots.

Furnaces Are Oil Fired

The vessel is equipped with three boilers, each of which has a natural draft capacity of 150 pounds. The boiler room, however, is equipped with two fans to induce forced draft. To maintain the maximum speed it is possible to operate on two boilers and the fans, or on all three boilers without the fans. The furnaces are equipped with mechanical oil burners. The vessel has two settling tanks, one to starboard and the other to port side of the boiler room. The pumps on the starboard side pump the oil out of the tanks, and pumps placed on her port side pump the oil into the tanks from the double bottom of the vessel. By this arrangement an adequate supply of fuel is assured at all times.

A double system of pipes is used. This permits the use of the superheated steam for the main unit, the propulsion machinery, and ordinary steam for the auxiliary machinery. The whole may be switched off and ordinary steam used for the propulsion, just as is desired. The vessel is completely self-sustained. It can pump fuel oil from a barge lying alongside through its own power. Pumps are installed for this purpose. Water-tube boilers are used. Extra tubes are carried and it is estimated that a new tube can be inserted within an hour without loss of speed to the ship.

In the colder climates, Texas fuel oil looses some of its fluidity and it would be difficult to pump through the pipes. The SAGAPORACK is therefore equipped with a radiator and steam is pumped into the oil to make it easy to handle. The whole of the engine and boiler rooms are largely self-sustaining. The hands of the crews never come in contact with the oil and the work consists chiefly in keeping a watch on the gages and making slight adjustments.

Throughout the trial five inspectors from the Emergency Fleet corporation were aboard. Beginning at 10:30, after the engines and machinery had an opportunity to get slightly heated and accustomed to being worked, thermometers were placed around in all conceivable places. Delicate instruments were adjusted and every temperature and the force of every draft was registered.

The SAGAPORACK carries 1100 tons of oil as bunker. This gives her a steaming radius of 10,000 miles under full steam. It was estimated that at sea she will make about 10 miles on one ton of oil normally.

Some important tests were made of the boilers by the inspectors. The analysis of the flue gases showed CO^2 12.4, 04.9, and CO nothing. The furnace temperature was found to be between 2400 and 2500 degrees Fahr. The temperature of the gases passing from the boilers was found to be 880 degrees Fahr. in the top first pass, 660 degrees in the middle pass, 575 degrees in the third pass, and the temperature of the escaping gases was 515 degrees Fahr.

The oil consumption then was 365 gallons per hour. The temperature of the steam was 475 degrees, and but 90 per cent of superheat was being used. The steam pressure was 196 pounds.

All Machinery Was Tested

All machinery on board was worked, including the condenser to supply the slack of fresh water which may become present on board the ship at sea at any time. Similar tests and temperature readings were taken on the turbines, gears, etc. The propeller, it was estimated, had made an average of 90 revolutions per minute.

After taking her steamer time at 8:30 in the morning, the SAGAPORACK was run at full speed ahead for six hours. At 10:23 Reedy island was passed and at 11:30 she started the turning test. The helmsman ported the helm to 30 degrees. The ship swung the complete circle of 360 degrees in 5 minutes and 56 seconds, while the propeller made 517 revolutions. The

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helmsman then starboarded the helm to 32 degrees, and swung the vessel the complete circle of 360 degrees in 6 minutes and 7 seconds, while the propeller made 570 revolutions. The turning test was completed by 11:46 and the vessel proceeded down the Delaware. At 12:10 Ship John was sighted abeam, and the vessel turned and started on her homeward journey.

On the return the wind had slightly freshened up. It was blowing about 20 miles an hour and was against the course of the ship. The tide, however, was still with her. Notwithstanding, on the return, the vessel averaged 12.06 knots per hour. Reedy island was sighted at 1:25, and she docked at Hog Island shortly after 5 p. m. On the homeward trip a stop was made while the anchors were tested. The anchors have 135 fathoms of chain and are run by a steam windlass. She dropped 130 fathoms as a test.

During the whole of the run the rudder, which is 17 feet long, was approximately one foot out of the water, due to the light condition of the vessel. There was a noticeable lack of vibration and the vessel was in complete control at all times.

All the provisions of the American navigation laws have been complied with in the equipment of the ship. The crew quarters, placed in the stern on the main deck, are commodious. The galley is equipped with all possible necessary devices for cooking and preparing of food. The mess-rooms are models of cleanliness and are commodious. In the boiler-room has been placed an instrument which is called a heelometer, by which that part of the crew stationed there can tell instantly any list to the vessel. Should a list be developed it can be corrected almost immediately by shifting the bunkers, the oil in the settling tanks, or by some similar means, and this can be accomplished by practically nothing more than the turning of a valve.

The crew carried on a vessel of the type of the SAGAPORACK is no larger than the crew carried on one of the cargo vessels, 3500 deadweight tons, built on the Great Lakes. The crew of the SAGAPORACK numbers 38 men. It requires but two men in the boiler-room and two in the engine room. The vessel carries a wireless operator, a supercargo and a guaranty engineer. The last named is a new position created by the shipping board. The guaranty engineer is a man from the turbine shops of the factory making the turbines for the vessel.

The ship is equipped with two dynamos of 15-kilowatt capacity each. These are for lighting and for operating the ventilating equipment only. All power, including that for hoisting, is from steam. In every way the vessel is self-sustaining.

The QUISTCONCK was the first vessel of this type produced at Hog Island. The second ship produced was the SACCARAPPA, which was launched on Aug. 24, 1918, and delivered on Dec. 30. She sailed from Newport News with a cargo of coal for Rio de Janeiro, arriving March 1, 1919. She then loaded at the Brazilian port cargo for New Orleans.

The SAC CITY was the third boat. Launched Sept. 30, 1918, she was delivered on Jan. 4, 1919, and loaded coal at Norfolk for Montevideo, Uruguay. She arrived at that port on Feb. 28.

The SACANDAGA, launched Oct. 29, 1918, delivered Jan. 22, 1919, loaded with general cargo at New York City for South America. She reached Lima, Peru, on Feb. 27.

The SAGAUCHE, launched Nov. 22, 1918, delivered Jan. 29, 1919, loaded with coal at Norfolk and sailed for Chile. She arrived at Antofogasta, Chile, on Feb. 28.

The PRUSA, launched Dec. 23, 1918, delivered Feb. 27, 1919, loaded with a cargo of packing house products at Philadelphia and sailed for Sweden on March 10.

The SAPINERO, the seventh ship produced at Hog Island, was launched on Nov. 22, 1918, and delivered on March 4, 1919. She loaded 350,000 bushels of rye grain at the Girard Point elevators, Philadelphia, and sailed on March 11 for Belgium.

The SAGAPORACK proceeded to Port Richmond, Philadelphia, and loaded food supplies for the Swiss relief service.

Chains Were Satisfactory

The QUISTCONCK has been criticized because Lloyd's withheld the equipment rating on account of her cables. As a matter of fact the American Bureau of Shipping passed the ship, and the Emergency Fleet corporation was satisfied with the anchor chains despite the objection of Lloyd's to the smallness of the diameter of two links. On a test in the Delaware river, the order was given to let go the starboard anchor, and the vessel was backed up. The ship then let go the port anchor and tried to pull up both anchors together. The chains held until one chain was slacked off and the other taken in. This was considered a severe test and completely satisfied the shipping board's representative.

In the case of the SAC CITY a report was obtained from Chief Engineer Osmun from Montevideo. His signed statement contained the following items:

"Draft leaving, forward 21 feet 9 inches, aft 24 feet, 10 inches, mean draft 23 feet 4 inches. Total distance run from Trinidad to Montevideo, 4729 knots. Running time, bar to bar, 20 days 5 hours and 43 minutes. Average speed, 9.7 knots; total distance by engine, 4988 knots; average revolutions per minute, 75.7; average fuel oil consumed, 27.1 tons daily by meter average. Temperature of turbine bearings forward 135 degrees, after 134 degrees; average lubricating oil temperature at cooler inlet 102 degrees, outlet 92 degrees. Both oil coolers in use throughout trip. Main thrust bearing perfectly cool throughout voyage. Blowers not in use at any time. Steaming fine on natural draft. Hull in good condition, no leakage.

"Following is result of 24-hour full speed trial run on Feb. 23, after 14 days at sea: Distance run, 270 knots. Average speed, 11.1 knots. Average revolutions per minute, 81.08. Turbine bearing temperature forward 138 degrees, after 137 degrees. Lubricating oil temperature at cooler, inlet 106 degrees, outlet 96 degrees. Sea 83 degrees, air 82 degrees. On orders from captain, stopped three times to repair indicator. Total time lost, 30 minutes. Considerable trouble with telemotor caused by hot oil in pipes where some passes through engine room. Unable to pump oil both ways in system. Changed oil pit in glycerine, working better, time lost 2 hours.

"All machinery working fine. No trouble whatever. Ample fresh water for boilers and drinking. Weather favorable during all of the voyage. Run 24-hour trial with two boilers, natural draft, making 75 revolutions. Plenty of steam on, economy, only three nozzles in use. Actual economy, 40 gallons in 24 hours. Favor two boilers. Draft on arrival, forward 19 feet 4 inches, aft 26 feet 6 inches.

"Condition of gears after examination at Montevideo: Low speed gears show slight pitting, not dangerous. Intermittent gears fine condition, no pitting. High speed pinion in fine condition, no pitting. No wire edges on any gears. All gears and pinions showed a fine film of oil and all are in seaworthy condition."

The Downey Shipbuilding Corp., Staten Island, N. Y., recently launched the 7800-ton steel steamship DOCHET. This vessel is the fifth built by the company for the Emergency Fleet corporation. When the vessel took the water she was nearly complete. Ship riveting was 99 per cent, steel hull construction 95.39 per cent, machinery and piping 78.62 per cent and outfitting 15 per cent, complete.

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Leonard C. Hanna 1850-1919

Leonard Colton Hanna, active head of M. A. Hanna & Co., Cleveland, died March 23, at his home in that city. He was 68 years old.

He was the youngest brother of Senator Marcus A. Hanna and was born in what now is known as Lisbon, Columbiana county, O., on Nov. 30, 1850. He was the son of Dr. Leonard C. and Samantha Converse Hanna. He was educated in the public schools of Cleveland and attended Holbrook academy at Ossining, N. Y. His older brother, afterward United States senator from Ohio, became associated with Rhodes & Co., Cleveland, which began business in 1876 and then was composed of R. R. Rhodes and J. F. Rhodes, later including M. A. Hanna. This firm did a general merchandising business in Cleveland, developing trade through the northwest which then was beginning to expand through the medium of copper and iron ore trade which was starting to move down the Great Lakes.

After L. C. Hanna had been offered an opportunity to enter the business with Rhodes & Co., he went instead to St. Paul where he was associated from 1872 to 1874 in the coal business with E. M. Saunders, until recently president of the Northwestern Fuel Co. He returned to Cleveland, and on Jan. 1, 1875, he became connected with the firm of Rhodes & Co., which in 1885 became the partnership of M. A. Hanna & Co. For 28 years Marcus A. Hanna was the head of this firm.

As early as 1845, Daniel P. Rhodes, who afterward became the father-in-law of M. A. Hanna, had been associated with David Tod in opening up a coal mine at Brier Hill, near Youngstown, O. This was the first coal transported by canal to the lakes from interior Ohio, and from these small shipments developed the vast tonnage of coal that annually moves to the northwest by lake vessels. Naturally, from the shipment of coal and supplies to the upper lake ore regions, it was only another step to becoming connected with the iron ore industry which then was beginning to indicate something of the growth which it afterward attained. Through all this development, Leonard C. Hanna grew with the rise of the firm, and in 1879 was admitted as a partner. For many years L. C. Hanna was the active head of the firm, and due to his broad business vision it added steadily to the breadth of its activities. It embraced the original lines of trade including coal, iron ore and pig iron. Through its connection as a large shipper, it became the lessee and operator of docks along the lakes owned by the Pennsylvania railroad.

When the Bessemer Ore association was organized, Mr. Hanna was its first president, and he continued as such until succeeded by W. G. Mather. It was while Mr. Hanna was the active head of the firm that lake transportation developed along the extensive lines of the present day. He was president of the Claire Furnace Co., director in the Republic Iron & Steel Co., the Great Lakes Towing Co., the Kelley Island Lime & Transport Co. and other limestone properties. At one time he had been a director of the Tennessee Coal, Iron & Railway Co., now a part of the United States Steel Corp. He resigned active connection with these various interests when he retired from active business in 1905, although he directed the affairs of M. A. Hanna & Co. in an advisory capacity.

LEONARD C. HANNA

Mr. Hanna married Miss Fannie W. Mann, of Buffalo, in 1876, and two daughters survive, Mrs. H. M. Hanna Jr., and Mrs. Paul Moore; and, his wife dying, he later married Miss Coralie Walker, of Richmond, Ky., who with their son, Leonard C. Hanna Jr., now a partner of M. A. Hanna & Co., survive.

Decision Affects Gulf Coast Yards

At least 10 of the wooden shipbuilding yards on the gulf coast will be affected by the decision of the wood ship division of the Emergency Fleet corporation to close all the yards of this class. These yards are located at Pascagoula, Moss Point and Biloxi, Miss.; Orange and Beaumont, Tex., and Madisonville, Morgan City and Lake Charles, La. It is probable that the Jahncke Shipbuilding Co.'s yard at Madisonville will remain in operation on private contracts and for the repair and construction of the large fleet of tugs and barges used by the Jahncke Navigation Co., the Jahncke Sand & Gravel Co., and other Jahncke interests. These combined yards employ about 50,000 men.

Tonnage is Scarce

San Francisco exporters are perplexed with the problem of securing sufficient tonnage to move California's big barley crop and stored holdings. Foreign demand would readily absorb the surplus stocks held in the warehouses of the state if sufficient ships could be secured to move it. This foreign demand has increased the prices of spot barley of shipping grade up to $2.37½ and $2.42½ a cental in San Francisco. There is a considerable quantity moving east via Galveston, Tex., and New Orleans but more vessels are needed for direct loading at Port Costa. The 5-mast schooner FALKENTIND, which arrived at San Francisco with a cargo of 4000 tons of wheat, has been chartered to carry a full cargo of California barley to Scandinavian ports at a rate of $40 per ton. Two motorships recently launched on the West coast have been chartered to San Francisco grain operators for barley cargoes to Norway and Denmark at the same rate. The American ship CELTIC MONARCH, now at Islais creek, San Francisco bay, will leave shortly with a cargo of barley for the United Kingdom. The United States shipping board is quoting a rate of $30 a ton on full cargoes of barley to the United Kingdom for its wooden steamers, but there appears to be no tonnage of this sort available for the trade at the present time.

The port of Seattle has begun work of constructing its $2,000,000 pier at Smith cove, Seattle, dredging operations being now well under way. This terminal is to be the most modern and up to date on the Pacific coast. The port commission has recently inaugurated a plan of meeting weekly with representatives of various civic and labor bodies in an effort to smooth out misundertandings and to work for the interests of the port. Actual work on the pier will begin soon.

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Successful Engineering Feat Opens Broad Field for Lake Yards

(Concluded from Last Issue)

Stern Section of the Van Hise Partially Careened at the Dock

IT was felt that ordinary prudence demanded that all openings in the ship should be sealed tight, so that if an accident occurred and the ship capsized, she would not sink. For this reason, no one was to remain inside, and arrangements were made to start the pumps from the deck. The steam pipe was led to the end of the boat, so that a tug could lie across the end and not be endangered, as she would be if moored alongside.

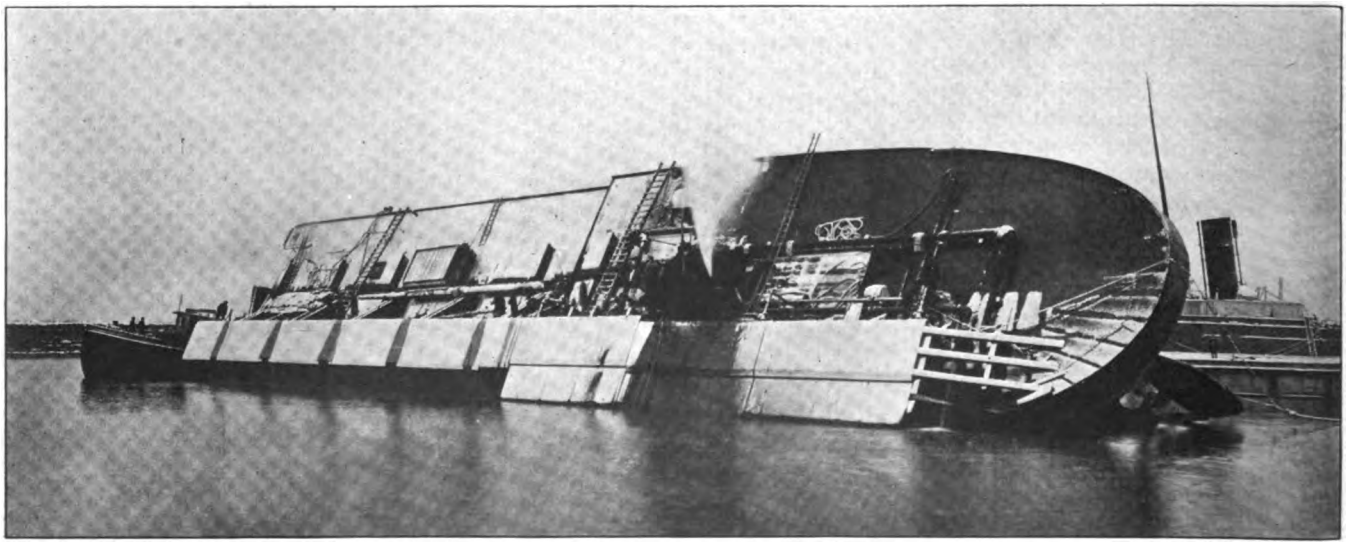
The forward section was piped in a similar manner, a temporary pump being placed upon the inner bottom, and another pump upon the deck, with connections through the 12-inch main to all the tanks. In an effort to meet all possible contingencies, the pumping arrangements were far too complicated, and the pumps and piping too large to give the best results. The pumps were located on the center line, and as a result had to work with a suction head of 20 to 25 feet most of the time. At times they would not pick up the water and the pipe lines had to be gone over repeatedly to insure all valves being tightly closed.

The method of handling the water ballast in both sections was similar. First, the forward double bottom compartment was filled, then the wing tanks, and lastly the pontoons, then the double bottom compartment was pumped out. On both sections, the filling was done entirely by the lower pump and the upper pump used when on her side. Some trouble was anticipated in getting enough men to handle the pumps and look after the lines while the sections were being rolled over.

As the rolling progressed without a sign of crankiness confidence increased and the men moved about inside and out with unconcern. In righting the vessel, gate valves in the pontoons were opened and the water allowed to run out, the section rolling back as freed from this weight. Then the wing tanks were pumped out and water pumped into the starboard inner bottom, to bring her to an even keel.

Complete Forward Section First

The forward section of the ship was completed first and on Dec. 5, 1918, it was towed out behind the breakwater at Buffalo to a spot where there was about 28 feet of water, and there turned. This section was in charge of two tugs, the one at the forward end holding the section at the place selected and the one at the after end furnishing steam to operate the pumps on the ship that controlled the ballast. The starboard No. 1 inner-bottom tank was full of water and there was about 100 tons of water in No. 2 port inner bottom tank. This gave the section a list of about 13 degrees. At 11 a. m. operations were ready to begin. Work was started on filling the port No. 1 inner-bottom tank. This was completed at 11:45 a. m. The section had a list of 16 degrees. At 12:02 work was started on pumping out No. 1 starboard into No. 1 wing tank and this was filled at 12:27, the list then being 24 degrees. The forward end of No. 2 wing tank was then filled at 12:35, the list being 26 degrees. The water was then pumped into the pontoons, beginning at the forward one. At 12:45, with the ship listed at 31 degrees, the pump was stopped to investigate conditions in the interior. The pump was started again at 1:04 and at 2:15 all six pontoons were full and the ship listed to an angle of 70 degrees. The interior was again inspected for leaks and some work done toward checking those which had developed. At this time, the water had been practically emptied out of all the inner bottom compartments except No. 1 port. At 2:45 the pump was started, pumping overboard a portion of the water in No. 1 port and the section gradually



HOW THE AFTER SECTION APPEARED DURING THE ROLLING OPERATION—STRUCTURES JUST ABOVE THE WATERLINE ARE THE PONTOONS BALLASTED WITH WATER TO CAREEN THE VESSEL

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came over to 90 degrees and the pumps stopped at about 4 p. m. The tugs then started back to the slip with the ship on her side.

She was trimming slightly by the stern because of a little loose water which was leaking in. Just off her slip she went aground and the tugs worked with her for some time trying to pull her over the high spot into the deeper water at her slip. The water she was taking in kept putting her harder on the bottom and it was then decided to leave her there until all leaks were stopped and the loose water pumped out. When this was accomplished, several days later, she was practically on an even keel drawing 14 feet of water. This work was done with the thermometer at 28 degrees and amid light snow flurries.

On Dec. 9, this section was towed by two tugs over to Port Colborne while on her side, a third tug lay alongside all the way so that the pumps could be used at any time. Some of the pontoons leaked a little, and this loss of water, together with what still leaked into the hold, would cause the ship to fall back a few degrees, and consequently it was necessary to start the pumps a couple of times a day to keep her upright.

On Dec. 10, the wind was blowing down the lake and the water was too low to attempt to get the section into the lock. However, on the following day, the wind had changed and the tugs took her into the lock and the gates were closed behind her. Ice had formed in the canals further along and it was decided not to attempt to take this section further until spring. She was taken out into deep water and righted and then tied up for the winter.

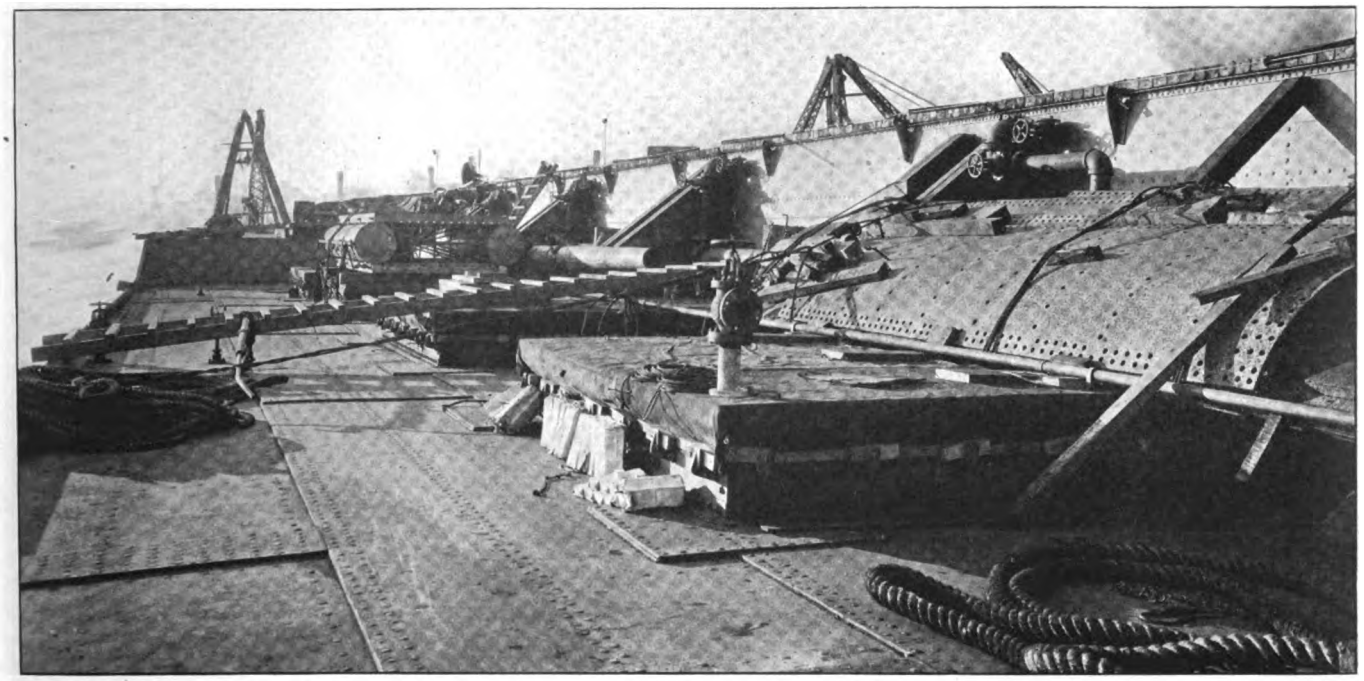
The after section was turned off the end of dock No. 1 in Erie basin at Buffalo in about 22 feet of water on Dec. 27. The section was kept moored to the dock and one tug used to supply steam for the pumps. At the beginning of the operation all the inner-bottom tanks were empty except No. 3 port and starboard which held about 200 tons each. The ship having a list of 22 degrees, it was not possible to hold this section on an even keel because the top angles of the center keelson leaked which let the water pass from the starboard to port tank after the water had reached a certain level. At 9:40 a. m. work was started on pumping water into the wing tanks, Nos. 3 and 4. This was stopped at 10:35 a. m. to shift the tug, which was alongside, to the end of the section. The tug crew had become a little nervous at seeing the hull rolling toward them. At 10:50 a. m. the pumps were started again and the wing tanks filled at 11:35, the ship having a list of 30 degrees.

Leaks Caused Trouble

This water was being pumped out of No. 3 starboard inner-bottom tank and owing to the lift the action was slow. At 11:35 the seacock was opened and the water pumped into the pontoons, beginning with No. 8. The ship reached an angle of 45 degrees at 12:20 with pontoons 8, 9 and 10 filling. At 1:37 pontoons 7, 8, 9, 10, 11 and 12 were full and the water was practically all out of the inner bottom except No. 3 port which held about 200 tons and the ship rested at an angle of about 65 degrees. The pump on deck was then started pumping overboard the water in No. 3 port inner bottom. This pump took water with difficulty and at about 2:35 refused to pick up any more. There were a large number of valves on this suction line, and owing to the cold it was difficult to close them tightly and a slight leakage there broke the suction to the pump.

At this time, an investigation of the interior disclosed that the wood bulkhead was leaking quite seriously, in the vicinity of the wing tank. This water came in about as fast as the pump had been taking it out of the inner bottom and as it ran right into the bilge it counteracted the removal of the water from the inner bottom and the ship remained at practically the same angle, 65 degrees. An attempt was made to pump this out but some of the valves had frozen and the pump would not pick it up. This water was gradually immersing the ship and an examination disclosed that it was now aground. As this was a new dock with a rock bottom it was feared she might be resting upon an obstruction which might puncture the side if she were allowed to remain there. For this reason, it was decided to turn her back and recaulk the bulkhead, before again attempting to repeat the experiment.

It had been snowing all day, and the ship was completely covered with about two inches of snow, making it



DECK VIEW OF THE FORWARD SECTION WHEN READY TO ROLL OVER—ALL HATCHES WERE BATTENED AND AN ELABORATE PIPING SYSTEM INSTALLED FOR CONTROLLING THE WATER BALLAST

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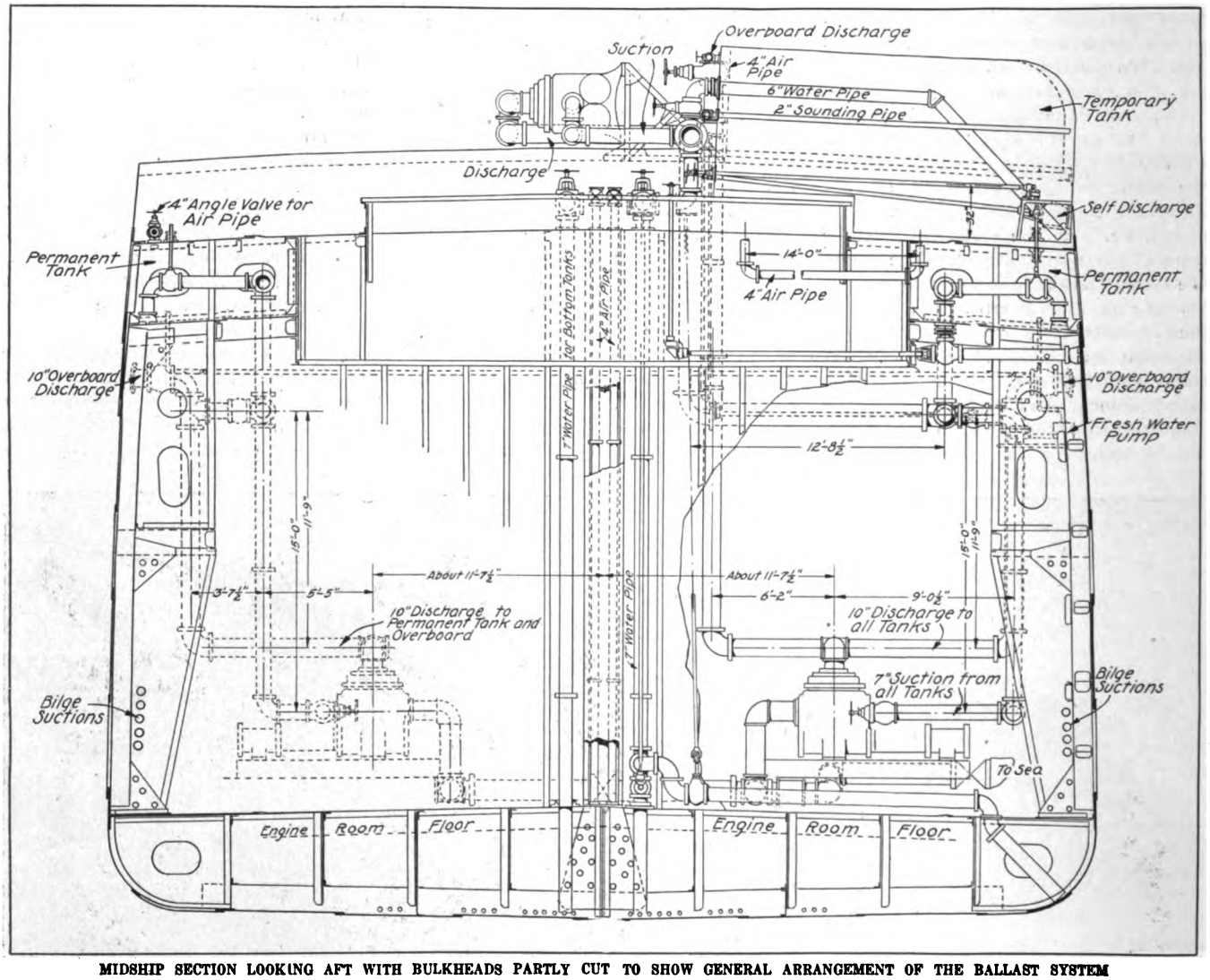

MIDSHIP SECTION LOOKING AFT WITH BULKHEADS PARTLY CUT TO SHOW GENERAL ARRANGEMENT OF THE BALLAST SYSTEM

difficult to move about on the sloping deck. The following morning, it was again snowing and it took all the morning to thaw some of the valves which had become frozen. It did not seem wise to continue the work further under these handicaps and so it was decided to pump out all the tanks and tie up until spring.

A few words as to the methods employed in cutting in two the ship, may serve to dispel the idea held in some quarters, that a ship so cut is weakened, and can never be as strong as before she is cut. The cutting is done in a drydock. Heavy 6 x 6-inch angle frames having one flange punched for ⅞-inch rivets and the other drilled for 2-inch bolts are bolted back to back and put in place against the shell at some point where there are a few shell butts. The rivets are cut out of these butts and the angles riveted to them. Then the shell plates which pass the cut are removed and patch plates which will hold the angle frames securely are riveted in place.

Every fore and aft member which passes a cut, is removed intact, to be replaced later. The effect of this is to make the actual cut, step back and forth, according to the disposition of the butts; at the same time the cutting frame forms a square end and a perfectly smooth cut. As it remains bolted together until all the patch plates are riveted, and all the other plates removed, it can be easily seen, that when the 2-inch bolts are again inserted and tightened up, that the ship will come together exactly as before being cut. Then a patch plate is removed, and the former shell plate put back in place and bolted up. One by one the old plates are replaced in this way and the rivets driven into the old holes. It is perfectly evident then, that the ship has been restored to exactly the same condition as before it was cut. Any difference, if any, would be in favor of increased strength due to a certain amount of new material in bars and straps, and new rivets. When this is finally riveted up, all around, the cutting frames are removed, leaving no trace to mark the place where the cut has been made.

All the ships cut by the shipping board were cut in this manner and bolted together again while afloat, and all plates above the water line replaced while afloat. The plates below the water line were replaced in the drydock. In the case of the VAN HISE, it is proposed to join her while afloat on her side. Both sections will be on an even keel, drawing 14 feet of water, and it should be an easy matter to bolt the two sections together. When this is done, all of the starboard side and three-fourths of the bottom plating can be replaced, riveted and caulked. The whole side and bottom will then be cleaned and painted. The water will then be drained out of the pontoons and tanks and the ship righted. By removing the pontoons and shifting the fixed ballast to the starboard side, and filling the starboard wing tanks, the ship can be inclined to starboard sufficiently to bring the port bilge out of the water, and the port side can then be plated and completed in the same manner as the starboard side. In this manner, it is proposed to rejoin this ship, without placing her again in drydock.

The work done on this vessel forms one of the most interesting engineering feats successfully accomplished

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during the war and it proves conclusively that it is possible to build large craft on the Great Lakes for deep-water service.

Great Lakes Ice Report

Reports from the regular and display stations of the weather bureau and the meteorological service of Canada indicate that the ice has practically disappeared from Lake Superior. There is some left in the harbor at Duluth, but this is disappearing steadily. No ice fields were reported visible in Lake Superior from Duluth east to Whitefish point. There are some few broken fields in the lower end of Whitefish bay. In St. Marys river the ice ranges from 12 inches at Sault Ste. Marie to 10 inches in Mud lake and about the same above Pipe island at Detour. It is reported that there would not be much difficulty in forcing a passage, if necessary, through this ice. In Green bay there are many open spaces of water showing and the ice is softening and breaking. No ice was reported in Lake Michigan and the straits of Mackinaw are open. In Lake Huron no ice fields were reported from any section of the lake. Ice continues in Georgian bay. The ice has run out of Lake St. Clair. No ice fields were reported in Lake Erie and Lake Ontario is reported free of ice, the last to be reported was that which run out of Kingston harbor.

In comparison with the 12-year period there is 7 inches less ice at Duluth, 8 inches less at Sault Ste. Marie; 16 inches less at the straits, they being open, and 7 inches less at Escanaba.

There are practically only two barriers of ice for navigation, the St. Marys river and the entrance to Escanaba, neither of which offer serious difficulty. There is less ice in all the lakes at this period than reported at the same period last season.

In consequence of the small amount of ice reported in the lakes at this time, and that navigation will probably not be generally resumed until some time later, this will be last ice report for the present season.

New Shipping Capital

During the first quarter of 1919, the following companies have been incorporated to engage in shipping activities:

JANUARY, 1919

Atlas Shipping Corp., N. Y.	$100,000
American Shipping & Trading Co., Del.	100,000
Alabama Steamship Co., Ala.	625,000
Emergency Towing Co., N. Y. (navigation, etc.)	60,000
Export Shipping Corp., Del.	200,000
Graham Shipping Co., N. Y.	250,000
Harvey, Florence Co., The, Fla. (own and operate ships)	100,000
International Steam Navigation Co., N. Y.	100,000
International Marine Salvage Corp., Del.	5,000,000
Lakes & Oceanic Barge & Transit Co., Me.	100,000
New Bedford Dry Dock Co., Mass.	200,000
Newark Ocean Transport Co., Del.	250,000
North Eastern Shipbuilding Co., Me.	100,000
New Berne Navigation Co., Del.	50,000
Narelle Co., N. Y. (deal in barges, lighters, other craft)	90,000
Progress-American Steamship Line, Inc., N. Y.	100,000
Ross Navigation Corp., Del.	100,000
Total	$7,525,000

FEBRUARY, 1919

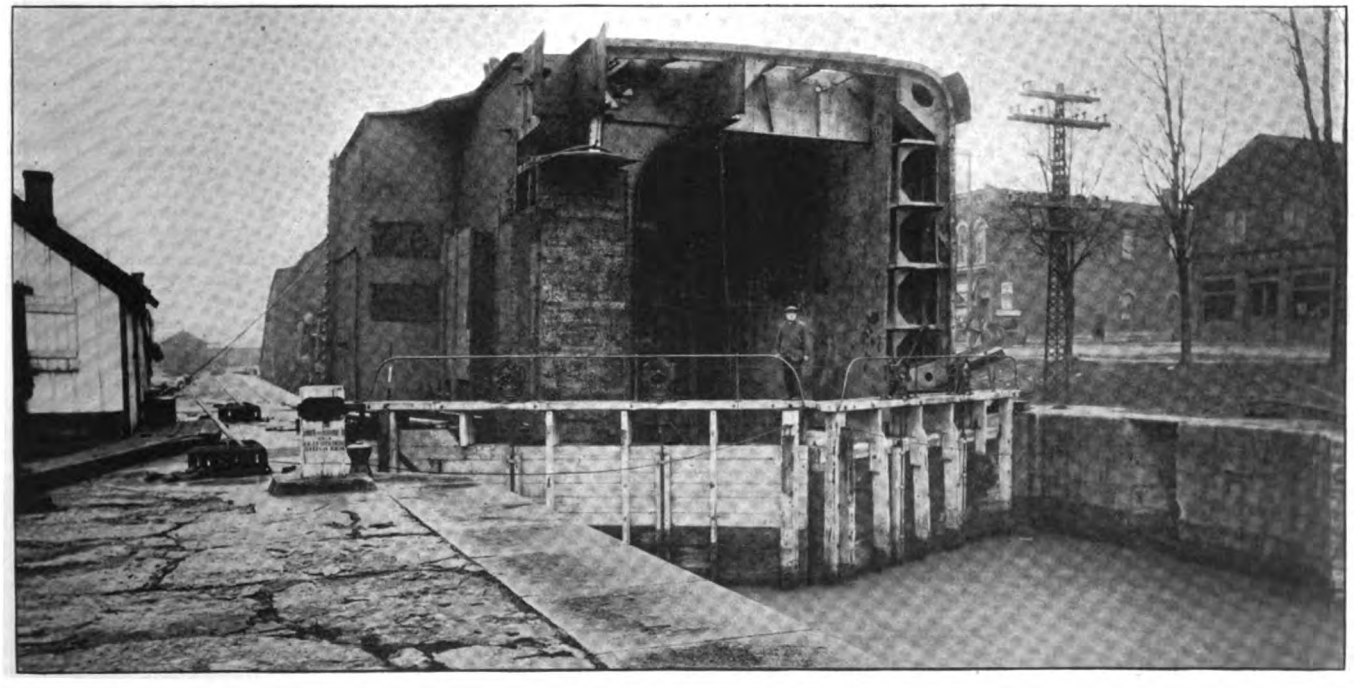
Azua Shipping Corp., Del.	$200,000
American Baltic Corp., Del.	4,500,000
Canadian-Amer. Steamship Corp., N. Y.	100,000
Mildred Motorship Corp., N. Y.	200,000
Svoboda Steamship Organization, Del.	1,000,000
Standard Steamship Co., N. Y.	100,000
Transfer, Schaefer & Koenigsberg, Inc., N. Y. (transportation and navigation)	100,000
Veritas Shipping Corp., Del.	200,000
Total	$6,400,000

MARCH, 1919

Adams, Lovell, Burlingham, Inc., N. Y.	$101,000
American Blufriesveen, Inc., The, Del. (shipping business)	75,000
Advance Navigation Co., N. Y.	50,000
Brooks Steamship Corp., Del.	500,000
Bright Navigation Co., N. Y.	50,000
Clinton Dry Docks, Inc., N. Y.	2,000,000
Delaware Dry Dock & Shipbuilding Co., Del.	1,000,000
France & West Indian Shipping Co., Del.	100,000
Great Western Transit Co., Del. (operate ships)	500,000
Great Lakes & Oceans Transportation Co., Del.	2,000,000
Job Shipping Corp., Del.	600,000
Lincoln Steamship Line, Inc., Del.	200,000
Nacirema Steamship Corp., Del.	500,000
Rational Steamship Lines, Ltd., N. Y.	100,000
Savannah Dry Dock & Repair Co., Del.	1,500,000
Total	$9,276,000

The extent to which fuel oil will be used by the American merchant marine is indicated in specifications providing for the merchant marine fuel for 1919. The amounts that will be provided at the different ports are as follows: Boston, 1,000,000 barrels; New York, 5,000,000; Philadelphia, 2,000,000; Norfolk, 2,500,000; gulf ports, 3,000,000; Panama, 3,000,000; Mexico, 6,000,000; San Francisco, 4,000,000; Los Angeles. 2,000,000; Puget sound ports, 3,000,000; Honolulu, 2,500,000.

A new set of rope schedules has recently been issued by the Whitlock Cordage Co., New York, manufacturer of manila cordage products. The schedules are devoted to the company's manila rope and consist of two tables which are conveniently arranged for ready reference. One table gives the sizes, both diameter and circumference; weights, in coils and per 100 feet; lengths, for full coils and feet in 1 pound; and strengths, both breaking and working, the latter being figured at about 20 per cent of the breaking strengths for efficiency in everyday service.



FORWARD SECTION IN THE LOCKS—CLOSE CALCULATIONS WERE NECESSARY AS THE AMOUNT OF CLEARANCE BETWEEN THE VESSEL AND THE SIDES OF THE LOCK WAS LIMITED

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Late Decisions in Maritime Law

Legal Tips For Ship Owners and Officers

Specially Compiled for The Marine Review

By Harry Bowne Skillman

Attorney at Law

THE master, it was decided in the case of SEGURANCA, 250 *Federal Reporter* 19, though he may be the agent of the owner, he must collect freight money for the charterer, and where the duty exists, his owners are liable for his acts or omissions in respect to its exercise. The master in the case at hand, it was then held. had implied authority to bind the owners and the ship in the matter of collection of freight money, due the charterers.

* * *

A charter party providing that the owner shall maintain the vessel in a thoroughly efficient state in hull and machinery for and during the services, makes the expense of repairs necessitated by mishap one to be borne by the owner, and the charterer is entitled to reimbursement for services rendered in making such repairs.—Aktieselskabet Stavangeren vs. Hubbard-Zemurray Steamship Co., 250 *Federal Reporter* 67.

* * *

A presumption of a vessel's unseaworthiness necessarily arises and alone will sustain recovery in a case where a vessel sinks from an unknown cause under circumstances where she had been subjected to no external peril, and where nothing but her unseaworthiness can explain the accident. "In other words," said the court in the case of TRANSIT, 250 *Federal Reporter* 71, "the presumption of unseaworthiness arises where the only inference in the circumstances is that of unseaworthiness. * * * As the circumstances attending the sinking of the TRANSIT do not exclude all inferable causes except that of unseaworthiness, but, on the contrary, very plausibly suggest another cause, the presumption does not exist."

* * *

The provision in a bill of lading that all litigation arising from the interpretation of the execution thereof should be judged according to French law and by the court of the place indicated on the bill of lading (Bordeaux), "which court the shippers and the claimants formally declare they accept as competent," must be construed as void.—Kuhnhold vs. Compagnie Generale Transatlantique, 251 *Federal Reporter* 387.

* * *

"It is not necessary, in order to establish a claim to salvage, that the salvor should actually complete the work of saving the property at risk. It is sufficient if he endeavor to do so, and his efforts have a casual relation to the eventual preservation of it."—ANNIE LORD, 251 *Federal Reporter* 157. In the same case it was said that the amount of salvage should be sufficient to obtain again the same service, if conditions should repeat.

* * *

"Like demurrage, wharfage can be fixed at a market rate which represents the amount of damages, loss of profits, etc. If proof be given of such a market rate, then no further proof would be necessary on the question of damage, and such a charge is properly allowed."—TRINIDAD, 251 *Federal Reporter* 174. It was further decided in such case that where the owner of a vessel failed to pay for repairs, the vessel remaining in the dock of the drydock company which made the repairs, the vessel is liable for wharfage and such company is entitled to a lien thereon.

* * *

"A riparian owner's wharf may extend out to the edge of navigability; but this is a relative term. It does not follow that, because there is a 35-foot channel in a harbor, every riparian owner may wharf out to that channel, regardless of his interest in reaching it, or of the obstruction to general navigation which he thereby causes. Particularly must this be true when, as here, the deep-water channel is upon the opposite side of the river, and the building of the wharf to that extreme limit is bound to interfere with the reasonable use of that channel by boats which must use it."—BART TULLY, 251 *Federal Reporter* 856.

* * *

The question in issue in the case of KOAN MARU, reported in 251 *Federal Reporter* 384, was whether shellac had been properly stowed. It was shown that shellac is easily stained, that the compartment in which it was stowed had recently contained coal, and that the coal dust had been removed by sweeping only, without washing. It was held that such storage was negligent and that such negligence was not relieved because of fault in management. The court also held that a clause in the bill of lading providing that in the event of liability no value should be placed on the merchandise higher than the invoice cost, not exceeding £50 per freight ton, or relatively for any portion thereof or exceed £20 per package, limited liability to £50 per ton in any case, and also not to exceed £20 per package, and the shipper did not have the option to choose whether its goods came under one or the other of these figures.

* * *

In the case of AVENGER, reported in 251 *Federal Reporter* 19, it appeared that salvage services had been rendered the ship named under a contract providing that the ship should be floated and delivered to the owners at a certain port within 60 days, with a provision for an extension of 30 days, if satisfactory progress had been made in the work. The contract was on a "no work, no pay" basis. The libelant entered upon the work and dug a channel 2220 feet long, through which to float the ship, but failed to float it within the stipulated 60 days, and an extension of time was declined. The question was whether satisfactory progress had been made, so as to entitle libelant to an extension of time, and the court held that in view of the character of the work, which was the subject matter of the contract, and the privilege of an extension of a fixed period, provided for in it, it belonged to the class where "satisfactory" was the equivalent of "reasonable," and the parties had themselves defined what should be construed reasonable, namely, a performance within 90 days, if the rate of progress at the end of 60 days assured a complete performance within 30 days thereafter.

* * *

In the case of the BELGIER, 246 *Federal Reporter* 966, it appeared that certain seamen signed articles at Havre, France, for a service of two years on a British ship, each seaman receiving at the time an advance of one-half a month's wages, which was legal under the British law. On arrival at New York, they demanded one-half their wages, which demand was refused, the facts showing that they were really deserting the ship because of their fear to continue on account of submarines ,and only used the demand for half wages as a means of getting paid without performing their contracts. The seamen sued for full wages, claiming under the seamen's act of March 4, 1915. The court held that while such act has abolished remedies for recapturing deserters, it does not, however, enable men to collect wages by making demands for half wages, which are part of a scheme to leave the ship. It was further held that while the act forbids advances and provides that they shall not constitute payments on account, and that it shall apply as well to foreign vessels while in waters of the United States as to vessels of the United States, the advance by the master of the British vessel of one-half the wages upon signing of articles is binding, and must be credited to payments, for it cannot be said that the act was intended to apply to advances made upon foreign vessels outside the United States, but only to advances made while such vessels were within the jurisdiction of the waters of the United States.

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Activities in the Marine Field

Latest News from Ships and Shipyards

No Advance in Vessel Insurance Rates

VALUATION of steel lake vessels for insurance purposes has increased 5 per cent, or from $56 to $60 per ton. The valuation was also increased $5 for 1918. Rates for hull insurance, however, have not been increased, according to Willcox Peck & Hughes, marine insurance underwriters, Cleveland. Underwriters were under heavy expense during last season due to the high cost of repairs. Notwithstanding this factor, the decision to make no advances in insurance on hull or cargo rates has been decided upon. The hull rate will be 3⅜ per cent and the rates for protection and indemnity and disbursement insurance will be the same as for the past season. No change has been made in the form of policy. Cargo rates on coal and ore will be 7½ cents per 100 tons, which is the same as last season's rate. The bulk of insurance on lake vessels will be carried by American firms this year. Some shifting will be done at Lake Erie ports and few ships that carried insurance sailed before April 15.

* * *

Capt. S. B. Massey, master of the steamer D. R. HANNA, left for Port McNicholl on April 7 to bring the vessel to Cleveland for repairs.

* * *

The ice was carried out of Chequamagon bay on April 6. A southeast gale practically cleared all ports on the south side of Lake Superior of ice. The floating fields were driven among the Apostle islands into the open lake.

* * *

On April 5, a heavy rain weakened the ice at the Soo which had gathered during the previous week owing to floating ice being jammed in Hay lake and frozen by the zero weather. The lightship CLOVER started out to place light buoys recently but was forced to discontinue on account of ice. With the help of tugs, she was detailed to break out the ice in the canal entrance which is now clear.

* * *

The G. WATSON FRENCH, which wintered at Fort Brady pier, Sault Ste. Marie, received her annual inspection and has taken on her crew.

* * *

Steamer No. 487 building for the Emergency Fleet corporation, was launched at the Cleveland yard of the American Shipbuilding Co. on April 5. The company expects to have 45 vessels ready to leave for the Atlantic seaboard at the opening of navigation.

* * *

The municipal dock at Ashtabula, purchased some years ago for $12,000 and since that time rented to private concerns, for $350 a year, is to be put to the use for which it was intended originally if tentative plans of the chamber of commerce and city officials of Ashtabula are carried out. It has been pointed out that barge lines through the extension of the Lake Erie barge canal would touch at Ashtabula, provided suitable docking facilities were available. It has also been suggested that the dock would be of value in handling comparatively small package freight. The possibility of passenger lines making Ashtabula harbor a stopping place has also been mentioned.

* * *

The freight and passenger steamer ARROW, of Sandusky, O., has been commissioned for the season to ply between Sandusky and Lake Erie islands. The vessel makes daily round trips between the islands and Put-in-Bay.

* * *

Tugs Q. A. SILLMAN and T. C. LUTZ, of the Great Lakes Towing Co., arrived in Cleveland from Buffalo recently.

* * *

President Livingstone, of the Lake Carriers' association, has been advised by the Canadian department of marine and fisheries that at the opening of navigation four wooden spar buoys, one red and three black, will be established by the department in 25 feet of water to mark the dredged channel leading to the Richardson elevator at Port Arthur, Ont.

* * *

Three of the new steel barges recently completed by the Ferguson Steel & Iron Co., Buffalo, for the barge canal were recently used for lightering wheat from the Dellwood elevator to the Washburn Crosby mills at Buffalo. The barges held 18,000 bushels of wheat each. C. S. Hawkins, constructing engineer for the barge canal, and Merton L. White, general western canal agent at Buffalo, observed the operations and commented favorably on them. Mr. White stated that he expected to see the canal open for operation by May 1, at which date there will be 28 of the new steel barges in commission.

* * *

At the Buffalo assembly rooms, there are more lake sailors ready to sign on than there has been for many seasons previously. Among them are many young men just out of the army and navy, all of whom are anxious to ship on lake vessels. Numbers of the boys just out of the naval service have had some experience on training ships and several of them served as apprentices on the Great Lakes last season. Vessel owners predict that there will be a surplus of men for the lake fleet.

* * *

Capt. Henry Fish, who celebrated his ninety-fourth birthday in September and who far 57 years was a sailor and vessel master on the Great Lakes, died at St. Clair, Mich, on March 30. Death was due to the infirmities of old age. He first sailed on the steamer HURON,

Completes Stormy Passage

WHEN the lake-built steamer ROMAN *docked at Philadelphia on March 20, she completed one of the most eventful voyages made across the Atlantic this year. Commanded by Capt. Robert M. York, she sailed from Devenport, England, and was 30 days overdue. For three days she wallowed helpless in the trough of a heavy sea with coal and provisions running short, steering gear disabled and a cargo of steel rails broken loose which threatened to punch holes through her skin. As a climax to these dangers, two mine sweepers which were lashed on the forward deck, broke loose.*

The ROMAN *came in from Bermuda in tow of the* BRITISH MONARCH, *which vessel picked her up 250 miles northeast of Bermuda in response to wircless calls. For 50 days the* ROMAN *battled with the elements. Heavy weather set in on Feb. 9 soon after the craft had left the Azores where she had put in for coal. Gales came from the west, northwest and southwest accompanied by heavy seas. At times the list gage registered a list of 49 degrees.*

After the steam steering gear was disabled two seamen were detailed aft to handle the hand steering gear. A heavy sea pooped the ship, stunned both men and washed them into the lea scuppers. Other members of the crew grabbed the wheel and ground the spokes hard over, just in time to prevent the vessel broaching to.

On Feb. 22 the coal ran short, which made it necessary to fire on wood, the supply being obtained from spare spars, hatch covers and dunnage. In this manner steam was kept up to operate the steam steering gear which had been temporarily repaired. Then the cargo of rails broke adrift and in spite of the heavy sea that was running, the second officer and several seamen succeeded in restowing the cargo to prevent it wrecking the vessel.

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one of the first steamers on the lakes, in 1840.

* * *

Cleveland shipmasters went on record recently in favor of having the entrance to the new Welland canal at Port Maitland. This decision was reached after hearing the delegates from Dunnville, Ont.

* * *

The Kelley Island Lime & Transport Co.'s barges NORMAN KELLEY and JAMES H. PELLET were recently taken from their winter quarters at Sandusky and towed to Kelleys island by the company's tug LINN B.

* * *

Extensive repairs are being made to the steamers WILLIAM NOTTINGHAM and HARRY COLBY by the Buffalo Marine Construction Corp., Buffalo. New bows will be fitted to both vessels.

* * *

The officials, captains and engineers of the Hanna fleet held their annual meeting at the Hollenden hotel, Cleveland, on April 8. The annual dinner was given in the evening.

* * *

The United States Supreme Court has affirmed the decree of the circuit court of eastern Michigan in the suit of the Capitol Transit Co., Detroit, against the Cambria Steel Co. The Supreme Court apparently leaves the verdict as rendered originally. The suit was the outgrowth of the foundering of the freighter BENJAMIN NOBLE in Lake Superior on April 28, 1914. The vessel carried a carload of steel rails and was bound for Duluth. None of her crew was saved but a small amount of wreckage was discovered which seemed to indicate that the ship sank near Duluth. The petitioner sought to limit its liability for loss of cargo but the right was denied.

From the East and South

THE Cunard line has enlarged its Boston quarters by adding a third floor to the Cunard building, 126 State street, in anticipation of a volume of business to set in at once. The saloon and cabin booking offices are located on the first floor and, together with the freight department, have been refitted and newly decorated. The steerage office occupies a lower floor which also accommodates the foreign remittance department. Charles Stewart, local manager of the Cunard line, anticipates a volume of traffic hardly approached before the war as soon as conditions become normal. Mr. Stewart promises that Boston is to have a class of ships fully as large and luxurious as in the past and that sailings will be frequent.

* * *

Boston and Baltimore are served by the Merchants & Miners Transportation Co. with a weekly sailing after a year of no water connection for passengers and freight between the ports. The ONTARIO, Captain Bond, has been placed on the route, with call at Newport News.

* * *

The Nantasket Beach Steamboat Co., F. L. Lane, manager, will operate its fleet between Boston, Hull and Nantasket with as full schedule as obtained prior to the war. Service last summer was cut to one or two boats of the smaller type.

* * *

The Ferris-type steamer BASAAN, following repairs at Boston, will load coal for a port in Brazil, a trade that will take others of the wooden fleet, at government rates. The steamers are being fitted with 9-ton steel rudders in place of the wooden rudders that caused trouble.

* * *

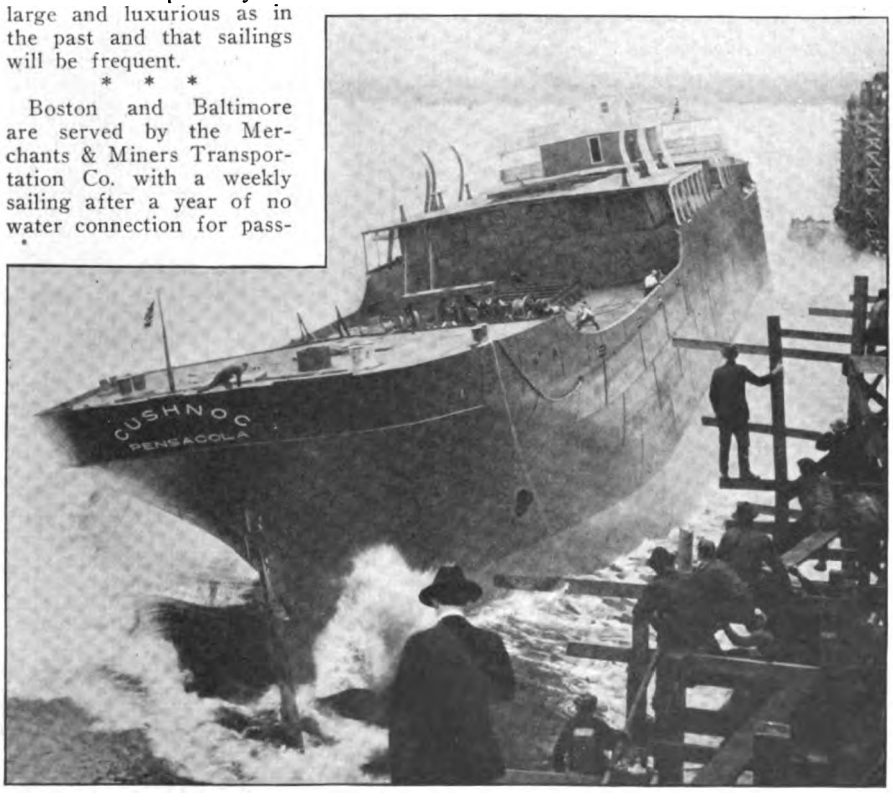
All vessels now owned and operated under requisition of the shipping board and the Emergency Fleet corporation should be returned to private ownership as soon as possible, demands the Boston chamber of commerce, which has voted overwhelmingly against government control. The referendum, in addition to the question of public or private control, also contained eight other vitally important questions of maritime policy. The chamber demanded that the navigation laws be amended so as to permit United States vessels operating under the American flag to compete profitably in foreign trade with vessels of foreign countries. The federal government, as speedily as may be, taking into consideration the military needs of the country, should turn back to the original owners the vessels now owned or operated under requisition, the chamber points out; and all vessels hereafter built or now building on account of the United States through the shipping board and the Emergency Fleet corporation should be sold and transferred to such private owners, ship concerns or corporations of the United States as may be desirous of purchasing them for use in the domestic or foreign trade, at a figure representing as nearly as possible the cost of the vessels to the United States government. The ballot favoring amended navigation laws stood: Yes, 800; no, 44. The result of the chamber's ballot was telegraphed to the meeting of the National Marine league in New York before which Chairman E. N. Hurley of the shipping board was speaking.

* * *

John M. Sweeney, president, the Pensacola Shipbuilding Co., Pensacola, Fla., in a recent letter to THE MARINE REVIEW, points out that the company launched on March 15 the CUSHNOC, a 9000-ton steel cargo vessel. The ship was launched sidewise and is said to be the largest ship to be launched by this method on the Atlantic or Gulf coasts. The launching data were carefully arranged beforehand and the launch took place without a hitch of any kind. The launching was under the direct supervision of David Hunter, in charge of the shipyard at Violet, La., assisted by William Michel of the Emergency Fleet corporation. The accompanying illustration shows the craft taking the water. Another keel was laid as soon as the vessel cleared the ways. The company operates five building ways and has four vessels approaching the launching period at the present time.

* * *

National Shipbuilding Corp., which recently bought out the steel yard of the Alabama-New Orleans Transportation Co., at Violet, La., launched, March 29, the steel tanker CRUDOIL, for order of the Pan-American Petroleum & Transport Co. This is the fourth of these tankers to be launched from this yard, the first three having been built before the Alabama-New Orleans company sold out to the National. The ships are of 2475 deadweight tons, 16,000 barrels capacity, 259 feet long, 37 feet beam and 20 feet molded depth, built on the



CUSHNOC TAKING THE WATER SIDEWISE AT PENSACOLA, FLA.

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Isherwood system. Steam turbines develop electric current which is carried to two 350-horsepower motors directly connected to the single propeller shaft, giving the tankers speed of 11 knots, loaded.

* * *

Enormous increase in the importation of coffee through New Orleans is reported for March. Nearly 400,000 bags were brought in late in that month by four steamers, all American owned and operated. PAWNEE brought 84,380 bags; AMESLAND, 87,089; EDWARD PIERCE, 83,942, and WINNEBAGO, 90,000.

* * *

The board of commissioners of the port of New Orleans expended on the industrial canal and on harbor improvements and upkeep nearly $13,000,000 during 1918, according to report filed recently by the secretary. The board received, from all sources, $12,133,543.78, and paid out $12,709,364.89. In other words, the cost of operation and development of these utilities exceeded the income of the board by $131,304.35. All of the loss came from the operation of the wharves, supposedly due to lack of shipping during the war. The cotton compress and warehouse, and the big grain elevators, however, showed good profits, while the industrial canal called for an expenditure of $5,401,629.50 of the total.

Up and Down the Pacific Coast

DECISION of the regular Alaska steamship lines to raise the passenger fares between Seattle and the North to 3½ cents a mile has prompted Gov. Thomas Riggs Jr., executive of Alaska, to propose the establishment of a government line. Governor Riggs urges the Alaska legislature to take steps to bring this about. The plan is to charter and operate four government vessels on the various Alaska routes. A bill has been introduced providing for an Alaska shipping board for the purpose of operating one vessel to Nome, two to southwestern and two to southeastern Alaskan ports. For some time there has been dissatisfaction over service to Alaska. The operating companies have contended that Alaskan rates had not risen in proportion to other routes. The war partially depopulated the northern territory resulting in decreased business. On the other hand the remaining residents have complained until now the territorial government proposes to meet the situation in the novel method outlined. The increase in passenger rates amounts to about 20 per cent.

* * *

Following many requests, the shipping board has finally assigned tonnage to the Puget sound-Hawaiian route, three new steel steamers having been allocated to this service. Puget sound shippers are hoping for regular service as there is a large trade with the islands. This has been almost all cut off during the last two years owing to the withdrawal of vessels. Resumption of service with Siberia is also promised, three large new steel steamers having been assigned to this trade. Likewise the shipping board has allocated four new vessels for the freighting of flour from Puget sound to Atlantic ports.

* * *

With the resumption of work at the shipyards, deliveries of government vessels are again being made and assignments have toned up the shipping situation in the Pacific Northwest. Several large repair jobs, which were delayed because of the strike, are now well under way. One of these is the steamship ADMIRAL WATSON, which was idle during the time the strike was in effect. The vessel was sent to British Columbia for repairs but the workmen on the other side refused to touch the hull and it was towed back to Seattle when the yards opened.

* * *

Although the wood yards of Washington are in position to accept foreign contracts, none has been awarded as far as known. Inasmuch as the shipping board has cancelled a number of contracts, the yards are operating with reduced forces and the future of the industry appears to be in doubt. On the other hand, British Columbia yards are busy with foreign contracts, a recent survey of those plants indicating that they have 62 contracts for wooden steamers and sailing vessels for French, Belgian and Norwegian owners.

* * *

Residents of Alaska will miss the steamship HUMBOLDT which has been withdrawn from northern service, sold and placed on the run between San Francisco and Los Angeles. This famous vessel was known as the "gold ship" of the North, having brought millions in dust to Seattle. She has made approximately 600 round voyages between Seattle and Skaguay and has been famous for her good fortune in escaping mishap.

* * *

The first wooden vessel launched following the strike was the CAPRARIA from the Meacham & Babcock yards, while the ELDENA was the first steel hull, she having been built at Skinner & Eddy yard No. 2. The Meacham & Babcock yard is in the hands of a temporary receiver, W. C. Dawson, a well known shipping man of Seattle, having been named to manage the affairs of the company.

* * *

With the withdrawal from the Philippine service of three steamers of the Matson Navigation Co. and their return to the run between San Francisco and Honolulu, the company finds that there is little further need of the wooden steamers of the United States shipping board, which have been handling the movement of sugar from the Hawaiian islands to the Pacific coast. Arrangements have been made to turn the wooden boats back to the government as soon as the regular Matson liners LURLINE, MANCA and HYADES return to their former runs to the islands. These three vessels, together with the ENTERPRISE, which is already in this service, are able to carry as much cargo as the whole fleet of wooden steamers and it is expected that nothing will be lost in the quantity of freight transported. The shipping board steamers slated to be released from the San Francisco-Honolulu service are the BLYTHESDALE, BELDING, NIPOLELA, YAKI YAKIMA, NEEOLAH, FORSTER, WAKANNA, ANOKA and CHIMO. It is not known, as yet, what disposition the government intends to make of the released craft. The Matson company will still retain some of the government steamers until such time as the movement of troops across the Atlantic permits the release of the company's liners MATSONIA, MAUI and WILHELMINA, now in that service.

* * *

A fleet of 20 wooden steamers has been allocated to the Charles R. McCormick Lumber Co., San Francisco, for transporting ties to the Atlantic coast. The vessels will move a total of 28,000,000 feet of material through the canal and up the Atlantic coast. The last shipment is to be on its way east by August. The ties are for the use of the railroad administration. It is reported that five wooden steamers are to be allocated to the food administration for the movement of flour, as a test of the vessels for this sort of service.

* * *

The $10,000 bet won by the Fore River shipyard employes, Quincy, Mass., from the Union Iron Works, San Francisco, was paid March 14. The wager was that the Fore River men could turn out more destroyers in 1918 than could the Pacific coast plant. The eastern plant won, 18 to 6.

* * *

The 5500-ton steel freighter DELISLE was launched by the Hanlon Shipbuilding & Drydock Co., Oakland, Cal., recently. Her tail shaft was not in place, but this will be installed when the vessel is placed in drydock for final painting.

* * *

Maintaining the pace of turning a completed steel hull off the ways once a month, the Schaw-Batcher shipyards in South San Francisco, Cal., launched the 8800-ton freighter WEST ALETA recently. The WEST CACTUS was launched April 12. During the past five months, the plant has been turning out vessels for the Emergency Fleet corporation at record speed. The WEST ALCOZ was launched Feb. 25. The WEST VACA, which was launched Nov. 3, got away on her maiden voyage to the Orient under the management of the Pacific Mail Steamship Co. on March 30.

* * *

The Pacific Steamship Co. has sold out passenger accommodations for the next two months on all vessels of its fleet available for service to Alaska. The steamers ADMIRAL WATSON, ADMIRAL EVANS and ADMIRAL KNIGHT are all to be overhauled preparatory to resuming operations to the north and the ADMIRAL SEBREE will be put in this service upon her return from the Atlantic.

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Equipment Used Afloat and Ashore

Dock Crane—Boring Mill—Submarine Signaling Device—Thread Cutting Tools—Steel for Chisels—Open-Side Crank Planer

THE Saginaw Shipbuilding Co., Saginaw, Mich., recently installed two electric rotating cranes mounted on portal piers, one of which is shown in the accompanying illustration. These cranes were furnished by the Brown Hoisting Machinery Co., Cleveland.

These cranes travel on tracks spaced 18 feet between centers. They span a railroad track and are high enough to allow freight trains to pass under the portal. The rotating and hoisting mechanism is mounted on the top of the portal. This mechanism also carries the operator's cabin where one operator controls all movements of the crane, including traveling along the track, hoisting and lowering of the boom, rotating in a complete circle, as well as hoisting and lowering the load.

An 82-horsepower induction type motor is used for performing all crane functions. The controller is of the reversing drum type. The electric current is 440-volt, 3-phase, 60-cycle. Current for operating the crane is taken from a conductor system along the crane runway. The crane is fitted with collector rings between the revolving superstructure and the portal pier to allow continuous rotation.

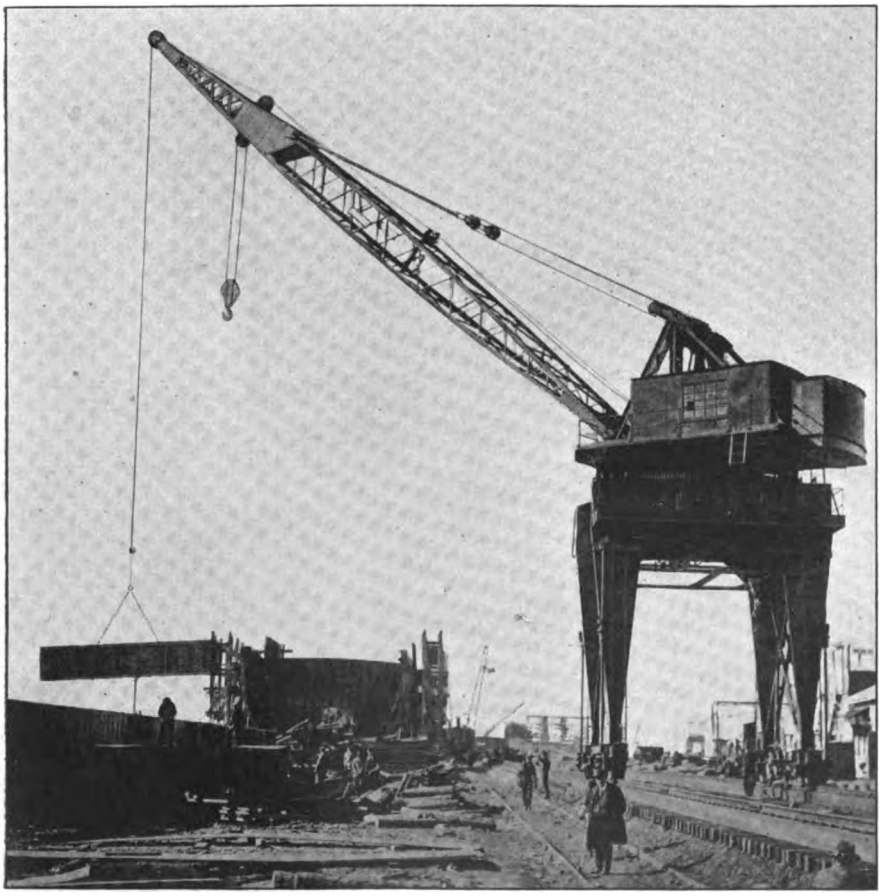
The hoisting mechanism consists of two hoisting drums, one operating the main hoist, which has a capacity of 15 tons on a 3-part line, the other drum operating an auxiliary hoist of 5-ton capacity on a single part of line. All movements of the crane are operated through the medium of balanced-type friction clutches.

For hoisting and lowering the boom, a spur gear driven mechanism is used. The boom may be hoisted or lowered with a 4-ton load on the hook. Each crane is equipped with a boom 100 feet long and the radius may be varied from 100 feet maximum to 40 feet minimum.

The motions of hoisting, traveling and rotating can be performed simultaneously and at the following speeds:

Hoisting 15-ton load on main hoist, feet per minute	30
Hoisting 5-ton load on auxiliary hoist, feet per minute	100
Rotating crane at full speed, revolutions per minute	½
Crane travel on straight track, feet per minute	300

The entire machine is mounted on four 2-wheel equalizing trucks. These trucks are connected to the portal pier legs by means of pins which allow the trucks to equalize on uneven tracks. The wheels have chilled treads with double flanges. The crane is provided with ladders and hand rails, so it is easy of access to the revolving superstructure. The crane is used for placing plates, machinery, etc., in ship construction, and, on account of its height and great reach, the entire ship can be covered.



ELECTRIC ROTATING CRANE MOUNTED ON PORTAL PIERS—ONE OF TWO RECENTLY INSTALLED AT THE SAGINAW SHIPBUILDING CO., SAGINAW, MICH.

Side-Head Boring Mill

Boring mills are, without a doubt, among the most useful tools to be found in machine shops devoted to marine work as they can handle a large variety of turned pieces economically. The machine shown in the accompanying illustration is a side-head boring mill, developed by the Pratt & Whitney Co., Hartford, Conn., which embodies several novel features. It is equipped with a turret for holding five tools and a side head particularly adapted for peripheral turning operations.

The bed and column of the machine are cast together. The left-hand housing has a flat bearing while the right-hand housing has a 3-track bearing with a long, narrow guide for the cross rail and side head.

The table and chuck are an integral unit, mounted directly on the vertical spindle. The chucking arrangement is of the 3-jaw type which can be operated independently or universally. In cases where it is advantageous to strap the work directly to the table, the chuck jaws are readily removed. The chuck pinions are alloy steel, heat treated and hardened to protect them from undue wear. Each pinion runs in two bearings, one on either side.

The spindle bearings are made amply large to insure long wear while a taper bearing is provided to take up vertical thrust. The spindle bearing surfaces are finished by grinding followed by lapping. Power is conveyed for rotating the table through the medium of bevel

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gearing. The main bevel gear is approximately as large as the chuck while the pinion is hardened and provided with a bearing on each side. Motion of the table is controlled by a disk-type clutch.

The cross rail is heavily proportioned with the elevating screw adjacent to the guides. The screw for the longitudinal motion of the saddle is located between the two lower tracks, which is said to make it impossible for the saddle to cramp under heavy feeding strains. The cross rail is elevated and lowered by power.

The side head is mounted directly on the column with but two joints between the cutting tool and the column. It extends across the column and has a bearing on the left-hand housing which permits of all strains being taken on the full width of the column. The bearings are of the square lock type. The side-head turret is steel, hardened and ground to insure accuracy. The various positions are controlled by two large keys which engage slots in the turret, one above and the other below the center of rotation. Clamping is by an eccentric binder. The tool seats are made integral with the turret.

The vertical head is mounted on the cross rail with bearings of the square-lock type. The slide can be swiveled in either direction to an angle of 30 degrees from the vertical. To facilitate close settings, graduations are provided on both sides of the swivel. The swivel is adjusted through the medium of worm gearing. Binders are provided for clamping the saddle to the cross rail and the turret slide to the swivel. Four bolts are provided for fastening the swivel at any angle to the saddle.

The turret has a large bearing surface and is mounted at an angle from the vertical to provide clearance in swinging large tools over the slide. The turret-lock bolts and index ring are hardened and ground. The turret can be indexed half way between each of the regular positions of the five tool holders. This permits two tools to operate simultaneously on the same plane or on planes of different heights.

The speed-change unit is of the selective sliding gear type. Two levers are provided which operate 12 speeds. When the starting lever is engaged, the speed-change levers are locked automatically. Rapid power traverse is provided in horizontal and vertical directions for both the side and vertical heads. Each head has 16 feeds. The feeds and traverse are controlled by three levers at the end of the cross rail and three on the front of the side head.

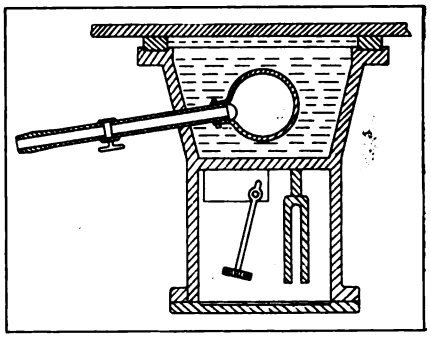
Observation scales, graduated in fractional parts of one inch, are provided for the vertical and horizontal feeds of the vertical head and for the side head slide. Hand wheels for fine adjustments are equipped with micrometer dials.

With the side head in working position, the machine will accommodate work up to 38 inches in diameter. The side head can be lowered below the table if desired and by this arrangement work up to 44 inches in diameter can be swung clear of the column and finished all over with the vertical head.

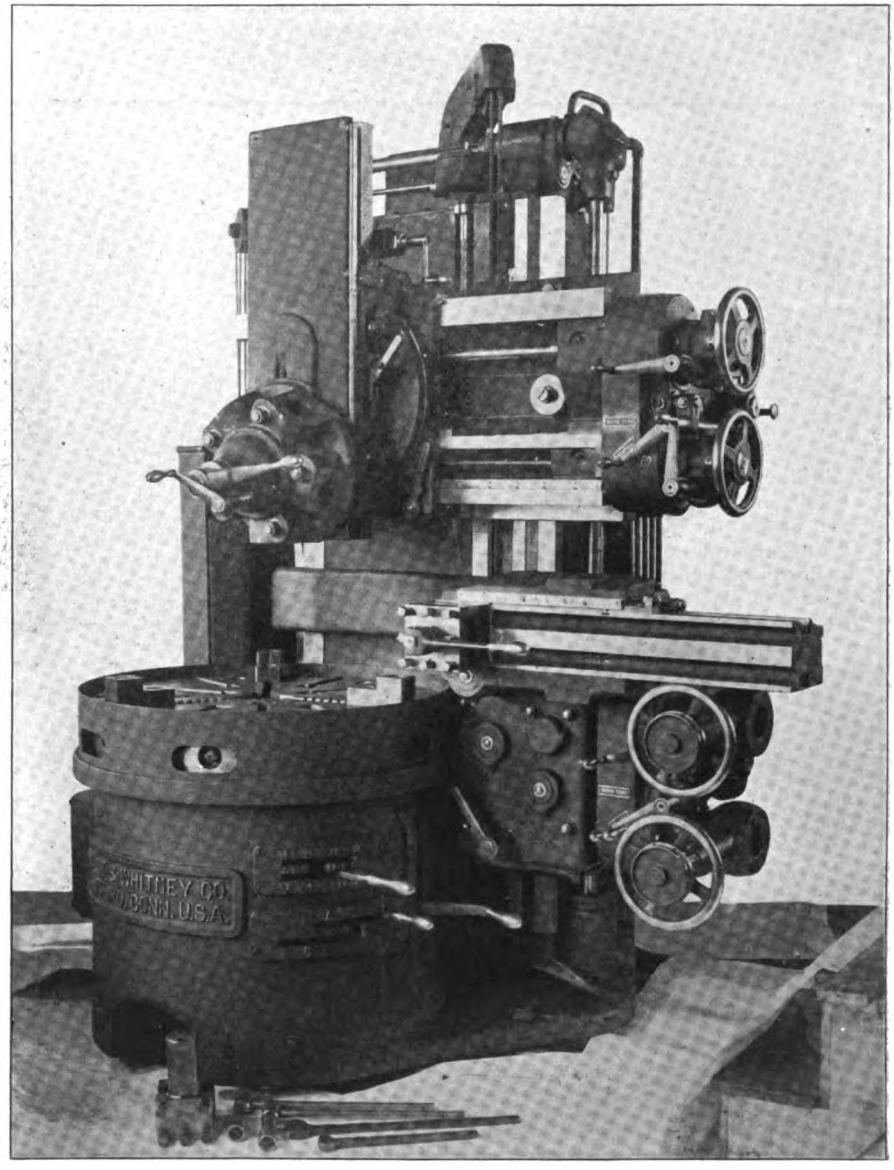
In marine machine shops, this tool is particularly adapted for finishing such work as pistons, cylinder heads, piston rings, glands, couplings, eccentrics, eccentric straps and similar parts.

Submarine Signaling Device

In a transmitting device for submarine signals recently patented in Germany, a receiver, secured to the outer layer of the ship's hull from inside, is filled with water and so arranged that the liquid is in contact with the outer plating of the vessel. Whereas in the usual arrangement the sounds are produced by a bell and a multiplying device arranged inside the water-tank or receiver, the essential point in the new device is that the means for producing the sound (bell, or the like) are placed externally on the wall of the liquid tank, the liquid making direct contact with the outer surface. The device



CROSS SECTION OF TRANSMITTING DEVICE



THE SIDE HEAD IN ADDITION TO THE 5-STATION VERTICAL TURRET HEAD ENABLES THIS MACHINE TO HANDLE A VARIETY OF WORK

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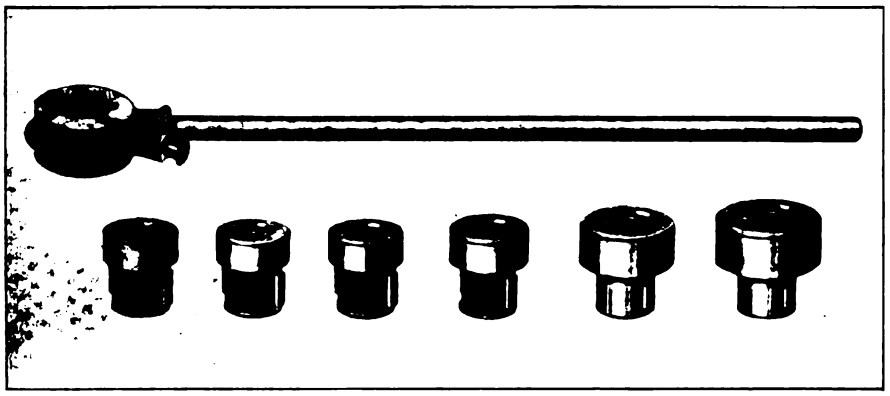


RATCHET DIE HOLDER FOR USE IN CONFINED PLACES—THE DIES ARE DESIGNED FOR READY REMOVAL FROM THE HOLDER

is shown in the accompanying illustration.

A tuning-fork or other means of producing sound is attached to the wall of the tank, the fork being set in vibration by a hammer actuated by clockwork. The whole device is so arranged as to be portable, and capable of being tightly pressed against the outer surface of the vessel. For maintaining constant or altering the volume of the liquid, the mechanism is provided with an auxiliary device, which can be manipulated in all positions from the outside. This auxiliary device may consist of a member or component which can be regulated as regards volume, and which projects from the outside into the liquid tank. When this member is rotated the liquid is pressed on to the walls, and so insures the liquid making contact, even when the device is suspended.

Thread Cutting Tools

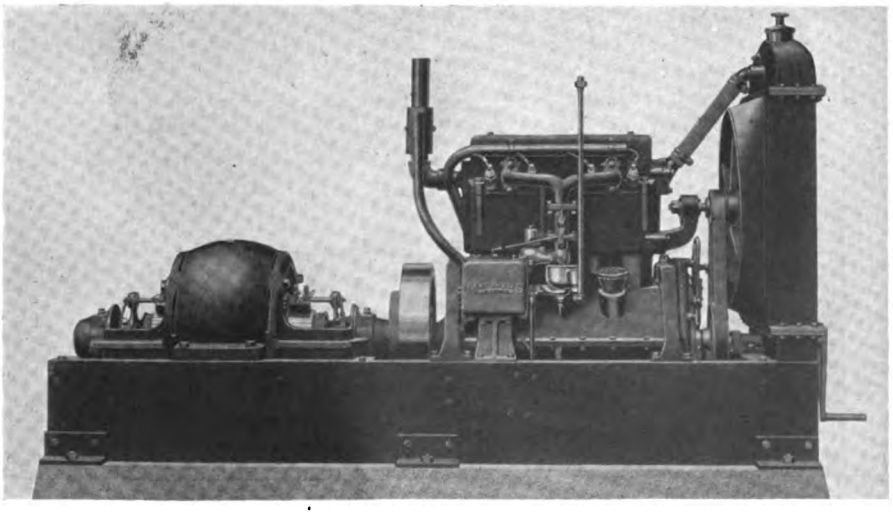
Manipulating thread-cutting dies in confined situations aboard ship or ashore is often a serious problem which sometimes makes it necessary to dismantle a unit partially, to provide ample working space. With the object of eliminating this difficulty, the Borden Co., Warren, O., recently developed the device shown in the accompanying illustration.

As this die holder has but one handle, which works on the ratchet principle, the device can be used near a bulkhead, engine column or other obstruction. The dies shown with the holder are for threading pipe. The sizes of dies accommodated by the holder run from ⅛ to 1 inch. The tool is finished to afford a good grip for the workman and to permit it being easily cleaned.

The ratchet mechanism is entirely inclosed. The object of this is to prevent the ingress of dirt or chips which would prevent it functioning properly. The tool is made right or left hand to

Auxiliary Electric Plant

TORPEDO gunners invariably aim for the engine and boiler rooms of vessels when attacking, which procedure generally puts the electric power plant out of commission. This puts out all lights and leaves the wireless outfit without operating current. Realizing the need of a simple auxiliary self-contained power plant that could readily be installed on deck or in the 'tween decks, the Emergency Fleet corporation, during the war, adopted the lighting unit which is shown in the accompanying illustrations. It can be started instantly and in case of a vessel being torpedoed or meeting with other accident will furnish current until the carburetor is flooded with water as the vessel goes under. The upper illustration graphically shows how the outfit is useful in furnishing light current while the crew is abandoning ship. In emergencies of this kind, light is necessary to avoid confusion and delay. The outfit illustrated is a product of the Matthews Engineering Co., Sandusky, O., and while primarily designed for shore installations, it was accepted by the government for use on transports in overseas service. It comprises a



6-kilowatt generator direct-connected to a 4-cylinder 3½ x 5-inch overhead-valve internal-combustion engine operated at a shaft speed of 900 revolutions a minute. The plant is automatically started, governed and stopped. A 56-cell 110-volt 128 ampere-hour storage battery is provided for starting. Control is through the medium of a switchboard made by the Matthews company. A valuable feature for automatically testing the reliability of the plant at stated intervals consists of a time clock, locked, and under the supervision of the chief officer of the vessel. He can set the clock's adjusting dial which causes the plant to start once in every 24 hours and run for 20 minutes for test purposes.

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accommodate both types of dies. The dies are easily removed.

Steel for Chisels

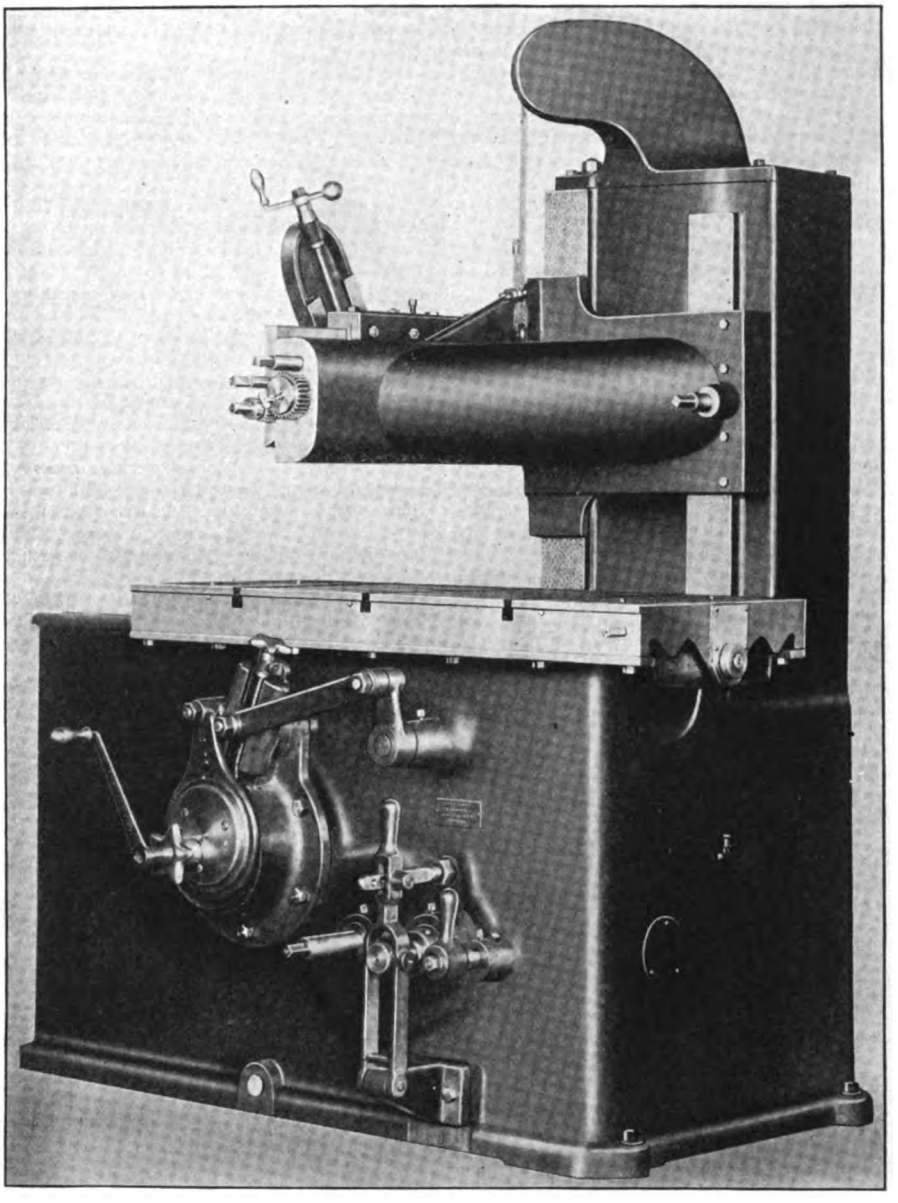
Pneumatic-hammer tools such as chisels, snaps and beading tools are put to severe use in shipyards. A new steel for this hard service has recently been developed by the Ludlum Steel Co., Watervliet, N. Y. This steel, it is claimed, will not break under the head or at the fillet, and is said to be particularly adapted for cutting out scuppers on the sides of ships which is one of the most severe usages to which cape chisels can be put. Cape chisels made of this steel actually can be bent in use without breaking.

Open-Side Crank Planer

For surfacing a variety of comparatively small units entering into marine construction, the crank planer has long been recognized as an efficient machine tool, owing to the fact that it can be worked to maximum capacity without chattering while taking heavy cuts.

The machine shown in the accompanying illustration is a type of crank planer recently developed by the Lynd-Farquhar Co., Boston. The object of the design was to combine the salient features of two standard machine tools; the shaper and crank planer. The bed is a box casting on which the platen travels. The column which carries the cross rail is securely bolted and doweled to the bed. The open-side design permits the machine to handle work that ordinarily would not pass between the housings of a standard type machine.

It is pointed out that all the operating handles on the machine are within ready reach of the operator while he is in a working position. When using the vertical feed in conjunction with the longitudinal feed, both operating handles are close together. The platen is provided with six speeds, three of which are derived by a gear shift lever while the remaining three are obtained by throwing in the back gears by means of a controlling lever.



OPEN-SIDE CRANK PLANER WHICH COMBINES THE PRINCIPAL FEATURES OF A CRANK PLANER AND A CRANK SHAPER

The platen is driven by a crank arm equipped with accelerated motion for quick return. The crank arm is actuated through the medium of a large steel bull gear which in turn is driven by gearing on the pulley shaft.

The platen is readily positioned for clearance at the ends of the cutting stroke by a screw which runs through the driving nut. This driving nut is connected to the crank arm through the medium of a connecting link. All working surfaces are gibbed to allow adjustment for wear. The feed crank is adjustable for different feeds and operates the feed screws through the medium of a shaft and rack. The cross rail is provided with a counterweight to insure easy manipulation when raising or lowering.

Business News for the Marine Trade

According to a report the Howard Shipyards & Dock Co., Jeffersonville, Ind., will be reopened.

The Caravel Steamship Lines, New York, recently obtained permission to increase its capital from $5000 to $50,000.

Incorporation papers have been applied for by the Ocean Ship Chandler Co., Ltd., New York. The incorporators are H. P. Molloy, F. K. Hennessy and E. P. McLaughlin, 25 Broad street, New York. The company is capitalized at $200,000.

The Merchant Marine House, Inc., New York, recently increased its capital from $200,000 to $400,000.

An increase in capital from $50,000 to $100,000 recently was made by the Marine Operating Co., Inc., New York.

The Job Shipping Corp. recently was incorporated at Wilmington, Del., with $600,000 capital, to engage in commerce and navigation.

The Long Branch Steamboat Co., Long Branch, N. J., recently was incorporated with $75,000 capital.

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by M. J. Gondstein, Harold W. Danser and M. D. Daumosl.

A contract for the construction of the quartermaster dock on Vashon island, Seattle, has been let to C. C. Snyder & Co., Pacific block, Seattle.

The name of the Advance Machine Co., Los Angeles, manufacturer of cast iron fittings, etc., has been changed to the Los Angeles Valve & Fittings Co.

The Southern Shipyard Corp., Newport News, Va., recently increased its capital from $100,000 to $200,000.

The Terry Shipbuilding Corp., Savannah, Ga., wants bids on steel castings, gray-iron castings and forgings.

The Marine & Commerce Corp. of America has been incorporated at Dover, Del., with $500,000 capital, by T. L. Croteau, M. M. Clancy and H. E. Knox, Wilmington, Del.

The Great Western Transit Co. recently was incorporated at Dover, Del., with $600,000 capital, to own and operate vessels, by Samuel C. Wood, Arthur M. Brody, Chicago, and L. B. Phillips, Dover.

A general engineering business will be engaged in by the Marine Engineering Mfg. & Supply Co., Wilmington, Del., which was recently incorporated with $100,000 capital.

Gustave E. Atkinson Jr., John A. Popp, Chicago, and others recently incorporated in Delaware the Great Lakes & Ocean Transportation Co. The capitalization of the company was placed at $2,000,000.

The Argos Steamship Corp., capitalized at $100,000, recently was chartered at Dover, Del., by Andrew Foulds, William F. Ashley, Justin S. Galland, Daniel J. Dowling and Clarence S. Ashley, New York.

Work in preparation for building steel barges at the Stillwater, Minn., plant of the Twin City Forge & Foundry Co., St. Paul, has been practically completed.

J. F. Stambaugh & Co., McGuffey, O., is installing equipment at their hemp plant, for the manufacture of oakum, which at present is in great demand by shipbuilders.

The Northwest Steel Co., Portland, Oreg., has completed its new ship outfitting plant, which will be equipped with all necessary equipment for the fitting out of steel ships.

The New Republic, American & European Shipping Corp., New York, has been incorporated with $50,000 capital, by M. Wapnowski, L. Kaczynski and A. Dambrowski, 111 North Sixth street, Brooklyn, N. Y.

Capitalized at $50,000 the Swedesboro Wharf & Transportation Co., Swedesboro, N. J., has been incorporated to build wharves and engage in a general transportation business.

The Commonwealth Steamship Corp. of Delaware recently was incorporated in Delaware with $10,000 capital, to build and operate ships, by Charles Hollander, John Kemp and Edward J. Reilly, all of New York.

H. M. Lucey, C. Hollig and E. V. Felton, Wilmington, Del., recently incorporated the Delaware Dry Docks & Shipbuilding Co. with $1,000,000 capital. The company will build wharves, ships, docks, etc.

A general freighting business will be engaged in by the Savannah Dry Dock & Repair Co., which was recently incorporated at Dover, Del., with $1,200,000 capital, by C. L. Rimlinger, M. M. Clancy and P. B. Drew, Wilmington, Del.

A number of New York men recently incorporated in Delaware the Tambler Corp., which will build and operate vessels. The company is capitalized at $20,000. Among the incorporators are James A. Martin and Patrick J. Dobson.

Nineteen barges for use on the upper Mississippi river are under construction, according to Chairman Hurley of the shipping board, but no contracts as yet have been let for the construction of towboats for which an allotment of $3,360,000 has been made.

A recent New York incorporation is that of the George P. Brown Corp., which plans to engage in shipbuilding. The corporation is capitalized at $5000. G. P. Brown, B. F. Parks and F. W. Fielding, 245 West Fifteenth street, New York, are the incorporators.

A recent New York incorporation is that of the Clinton Dry Docks, Inc., New York, which will engage in contracting and shipbuilding with $2,000,000 capital. The incorporators are C. R. Delmage, H. R. Dawson and E. Vandewater, 177 Montague street, Brooklyn, N. Y.

Capitalized at $50,000, the Watercraft & Dock Construction Corp., New York, has been incorporated to construct tugs, barges, etc., by A. McWhirter, 45 West Forty-second street. W. Goodman, 911 Park avenue, New York, and H. Goodman, 128 Kent street, Brooklyn, N. Y.

The Interboro Dock Corp., Brooklyn, N. Y., has been incorporated with $250,000 capital, by C. H. Rogers, 643 Smith street; J. E. Whalen, 1513 East Twenty-third street, and A. M. Frost, 55 St. Marks place. The company will engage in a general docking, storing and warehousing business.

The Cochran Pipe Wrench Mfg. Co., Chicago, has begun manufacturing at its new plant located at Seventy-eighth street and Woodlawn avenue. The company manufactures wrenches of various types and spring oilers. Increased business made it necessary for the company to seek larger quarters.

The business of building and operating vessels will be engaged in by the Scotia Corp., which was recently incorporated at Dover, Del., with $20,000 capital, by James A. Martin, Lawrence N. Martin, Charles P. Schroetter, Patrick J. Dobson and Maxwell L. Kerpel, all of New York.

Construction and operation of boats will be the business engaged in by the Logue Transportation Co., which was recently incorporated at Dover, Del., with $10,000 capital. The incorporators are Charles H. Lawson, Brooklyn, N. Y.; Albert R. Palmer, Madison, N. J.; Henry C. Wenzel Jr., Woodhaven, N. J.

The San Francisco Open Dry Dock Co., capitalized at $2,000,000, has filed articles of incorporation at San Francisco and designated a site near the eastern end of the old exposition site as the location of its dock. The company plans to erect a wharf 58 x 1100 feet, two slips 200 feet wide, an 8000-ton floating drydock of wood and concrete, a warehouse, office and machine shop. The incorporators are W. H. Kearney, F. P. Parker, C. H. Kearney, J. W. Machado, A. T. Briggs, P. A. Breen and I. L. Steinman.

T. L. Croteau, H. E. Knox and M. Clancy, Wilmington, Del., recently incorporated the Macirema Steamship Corp., to build and operate ships, with $500,000 capital. The same men also are the incorporators of the Brooklyn Steamship Corp., which is also capitalized at $500,000 and will engage in the same business.

Shipbuilding may become an important industry at Tampico, Mexico, as the result of the establishment of a shipbuilding yard there by the Laguna Transportation Co. A shipway has been built as well as machine shops, etc., and the necessary equipment purchased. According to an announcement, in addition to building and repairing its own vessels, the company will do general contract shipbuilding.

The bureau of yards and docks, Washington, has awarded a contract to M. H. McCloskey Jr., 1620 Thompson street, Philadelphia, for constructing shipbuilding berth extensions at the League Island navy yard. The structures will be of reinforced concrete and steel, 122 x 169 feet and 128 x 148 feet. The work will include extension in crane runway and an increase in operating facilities.

A reorganization of the Anchor Shipbuilding Co., Washburn, Wis., which was organized several months ago under the direction of Wildmar Nicolaysen, Duluth has been effected by George F. Morgan, William Messenger, W. Gunn Smith and others. The company has completed plans, and is now preparing to go ahead with the construction of six marine ways, structural and boiler shops, machine shops and other buildings. The new yard will be capable of accommodating boats up to 600 feet. The company plans to specialize in turning out steel trawlers and small freighters of 1000 to 2000 tons. The company expects to lay the first keel about June 1.

New Trade Publications

ADJUSTABLE WRENCHES.—The Riflaw Wrench & Tool Co., Pittsburgh, recently issued a leaflet describing an adjustable wrench that can be used for a number of purposes. It is said that this tool eliminates the inconvenience of carrying a large assortment of wrenches and that it is adaptable to all kinds of nuts. It is provided with a right and left hand ratchet and the jaw unit can be set at eight different angles from the handle to grip nuts in confined places.

ELECTRICAL SUPPLIES.—The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a complete catalog of all the electrical supplies which it produces. Over 1250 pages are required to list the various articles and describe them. A complete cross index, an index to style numbers and a table of approximate cost multipliers from which to obtain a close estimate of the cost of each article listed, serve to make readily accessible the information contained. Although primarily a catalog, the volume contains much practical information for the engineer, particularly that portion which is devoted to suggestions for the use of apparatus described. The company plans to issue a similar catalog each year.

FEED WATER FILTERS.—A booklet describing feed water filters and grease extractors has recently been issued by the Griscom-Russell Co., New York. The booklet is illustrated and contains much information regarding the device. It is pointed out that the apparatus effectually removes oil from water and mud and sand from river and lake water. The filtering elements are interchangeable cartridges of heavy cloth mounted on individual wire mesh rectangular frames. These cartridges are designed to present a maximum filtering surface in a given space. By-pass valves allow an uninterrupted flow of water to the boiler while a manhole in the top of the filter makes the removal of the cartridges an easy operation. Several illustrations are included, among them being two which show typical installations.

COMPRESSORS.—The Norwalk Iron Works Co., South Norwalk, Conn., has published a 16-page bulletin describing its compressors for oxygen and hydrogen. Points of design developed to attain high speed, with light weight, and compact but accessible construction are outlined. The compressors shown vary in capacity from a displacement of 12 to 196 cubic feet per minute. The cooling system used, embodying water jacketed cylinders and special intercoolers is described and illustrated. The intercoolers divide the gas from the first cylinder into a series of thin streams which pass around pipes in which water is circulating. All details of construction even to the method of bearing adjustment and packing of joints are outlined in this bulletin.

LOCOMOTIVE CRANES.—In a 96-page profusely illustrated catalog, the Brown Hoisting Machinery Co., Cleveland, treats exhaustively of its locomotive cranes. The many uses of these cranes are fully and graphically set forth by action photographs. Some of these uses include loose material, heavy excavating work, handling of castings, structural material handling, heavy sheets, plates, etc., manipulating pile drivers or shovel dippers, shunting cars about the storage yard and terminal hoisting and unloading. The mechanical features are treated in detail and fully illustrated. Dock installations, among which is the one at the port of Cherbourg, France, with 18 raised-pier types, and a number of 4-wheel standard types are shown. Special wharf-type cranes spanning four railroad tracks were installed by this company in American terminals in France to aid the handling of miscellaneous materials for the army. These are described. The extensive use of locomotive cranes in shipbuilding is indicated by a number of illustrations. Numerous foreign installations are shown.

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